

The Oriental Watchman and Herald of **HEALTH**

A MAGAZINE FOR HEALTH HOME AND HAPPINESS

40th Year of Publication

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JUNE 1949



BLOOD IS ALL THINGS
TO THE TISSUES

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EXERCISE

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WE MUST EAT AND DRINK

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YOU CAN'T SEE A CALORIE

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HOW ARE YOUR EYES?

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PNEUMONIA

* *

CAN THIS BE THE CAUSE
OF CANCER?

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NEWS, RECIPES

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DOCTOR SAYS

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ETC., ETC.



Sharing With Dolly.

R. Krishnan

successful food for poultry and cattle, according to reports of the American Chemical Society.

Strange Disease

SWEATING sickness was a strange disease which struck Europe in the fifteenth and sixteenth centuries and took thousands of lives. The malady spread rapidly where living conditions were most insanitary. It was characterized by cold shivers, followed by headache, fever, and delirium. It was often fatal within an hour, but if the victim survived twenty-four hours he usually recovered. The disease made its last appearance in 1665, and since then it has not occurred again.

Leprosy

LAWRENCE M. JUDD, of the famed leprosarium in Hawaii, says that except in children, leprosy is less communicable than tuberculosis. In fifty-four years not a single doctor or nurse at the Kalaupapa settlement has contracted the disease.

Spirits

HARRY HOUDINI, one of the world's greatest magicians, promised before his death to unlock two sets of handcuffs after death if he could be called back from the "world beyond." Ever since his death in 1946 spiritualists and magicians have tried unsuccessfully to contact his spirit. Recently thirteen magicians seated themselves in a dimly-lighted room, held hands and made one last attempt to communicate with him. When the lights were turned on they knew that they had failed again for the handcuffs were undisturbed. If there were any spirits about they did not understand Houdini's handcuffs.

Super-Size

DANISH hens lay eggs that are too large to suit British rationing authorities. Twenty eggs per 1,000 grams is the average weight that allows good distribution in England, but the hens in Denmark are uncooperative and insist on laying only sixteen per 1,000 grams.

Tintanium

TINTANIUM, a silver-white component of iron, has been termed the "metal of the future" since it is only

twice as heavy as aluminium, but nearly twice as strong. It is reported that there is more of it than all the copper, tin, lead, zinc, nickel, antimony, silver, and gold combined.

Bees at Work

DESMICES made of transparent plastic material, in which bees can be watched at work and which can be kept in a school-room, were on view at the National Garden-Lovers' show at the Olympia, London, last August.

Oil

THE Press reports that in Australia and New Guinea the greatest search for oil that has ever been undertaken in that part of the world



WHAT THEY SAY

"I had the opportunity of reading your magazine and I am very much taken up by it. This seems to be one of the ideal books for a family. I shall be pleased if you would send me a copy of the magazine monthly."—*L. M., Ceylon.*

"On a review of one year I am pleased to state your magazine is exceedingly good. The get-up is neat and inviting and the articles are quite interesting. The general information is varied and instructive and the medical information is written in such simple language that it is understandable by a lay man.... In recognition of its merits I am hereby renewing my subscription for a year."—*Dr. H. S. R., East Godavary.*

is being made. The main search is being concentrated in Queensland, the Kimberley area of Western Australia, and in Papua, New Guinea.

The Andamans

IN FEBRUARY, 200 settlers for the Andamans sailed from Calcutta. The party comprised agriculturists and artisans. They were given free passage, a gift of cattle, and free implements. Each family is given ten acres of land and a cash allowance of Rs. 100 per month for nine months. They are exempt from land tax for two years.

Naturalization

THE new draft constitution of Argentina requires all foreigners living in the country to become naturalized citizens at the end of two years residence or to leave the country. This has caused consternation to many British and American business men and others who are occupied there.

Germany

A PRINTER in Offenburg, Germany, has produced a school atlas from which the name "Germany" has been omitted. Instead the country is divided into French, British and American occupation zones. Russian territory is not mentioned.

Secrecy

THE Soviet War Graves Commission has ordered that the names on two thousand Russian graves in the Bochum area in Germany should be removed. Most of the graves are of Russian slave workers from the Ruhr factories. There is no explanation from Moscow for this curious decision.

Gems

THE first man-made synthetic gem stone, known both as "Butile" and "Titania," is being made in the laboratories of two industrial companies in New York.

Centenarian

ON JANUARY 13, a son was born to Mr. Henry Potts, a negro who is 100 years old, of Cape Town, South Africa. His wife is thirty-nine.

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H. R. H. Prince Charles of Edinburgh, son of Princess Elizabeth and the Duke of Edinburgh, photographed with his mother at Buckingham Palace, London.

W. N. P. S.

Four Generations in the British Royal Family. Seated at the right is Queen Mary, Prince Charles' maternal great-grandmother, while standing at the rear is King George VI, the baby's grandfather. Princess Elizabeth is seen holding her baby son.



W. N. P. S.

EXERCISE

BY ALL MEANS—BUT DO IT RIGHT

W. E. MACPHERSON, M.D.

IT HAS been well stated that "the benefit of muscular work cannot be over-estimated; that exercise is necessary for healthy existence; that it is a physiologic need of a primitive kind which cannot be safely eliminated by civilization." There can be little doubt that exercise strengthens the body as a whole. It is generally conceded that it tends to prolong life. Just how long one might expect to extend his life's span by engaging in proper exercise cannot be accurately estimated, and just the exact amount of exercise which is necessary to assist one in living the longest has never been accurately determined.

As we study this matter, let it be assumed that all of us are interested in living for a reasonable number of years. Nevertheless, this is not our entire interest. A thing of major importance to us is to be able to live actively and productively. The fact that proper exercise enables one to live more healthfully and more actively is well accepted. "It is difficult to find men who have been injured by muscular exercise, but relatively easy to find those who have failed of normal development or who have been physically handicapped by the lack of it."

It is not the purpose of this article to give to anyone the impression that exercise can substitute for any of the other important features which constitute a rational health programme. Neither is it the pur-

pose to attempt regimentation of all people to the same curriculum of physical activities. Obviously such a plan would be faulty.

It will not be necessary to give a detailed discussion of the chemical changes that occur in the body with the production of muscle contraction, but a brief statement of this matter should be made. Compared with other organs, muscles are the greatest users of energy food. In the laboratory it is easy to demonstrate that a muscle, temporarily isolated from its blood supply, will contract when it is stimulated. However, in order for it to maintain its ability to do this for any length of time, it must be adequately supplied by circulating blood. By this means muscles are furnished with necessary energy food and oxygen. The circulating blood also picks up waste products from the tissues and carries them to the various points of elimination.

The amount of work that a muscle can perform during a given period of time is limited, not by its relative size or by the amount of energy food which is supplied to it, but by the amount of oxygen which it receives. When an individual is at rest, the circulation rate of his blood and his oxygen consumption are relatively slow. During periods of exercise the quantity of oxygen consumed becomes greatly increased. The oxygen supply to tissues is increased principally by an increase

in the volume flow of blood from the heart through the blood vessels, by an increased rate of breathing, along with an increased absorption of oxygen from the lungs and an increased rate of transfer of the oxygen from the blood to the tissues.

If one who has been indulging in a relatively sedentary programme is to add to the amount of muscular work which he performs in an efficient fashion which will be to his benefit rather than to his harm, he must increase his capacity for work by indulging in graduated systematic exercises. By following such a programme one will find after a time that not only is he able to perform easily and efficiently certain tasks which were previously beyond his capacity, but that he also benefits in many other ways. The general physical development of an individual who systematically exercises is considerably better than that of the individual who persistently follows a sedentary programme. It is of practical interest to note that the more systematized the exercise, the better are the results. Exercise should be part of one's routine if he is to receive optimum benefits from it. Occasional explosive episodes of physical activity probably are of no value, and, as a matter of fact, may actually be harmful.

It has already been stated that the most noticeable effects of systematic muscular exercises are the increase in size, strength, and endurance of

muscles. These points are so well known that no particular comments seem necessary, but it is interesting to know that the increase in strength and in endurance of exercised muscles is not due entirely to an increase in the actual size or circumference of a muscle. The improvement of muscle function is out of all proportion to the gain in size, and is due to the fact that the circulatory, respiratory and various chemical factors needed for maintaining a proper nutrition have been developed above their sedentary level. As a matter of fact, reports from authentic sources based upon careful experimental observations demonstrate that regulated muscular exercise increases the size and function of practically all the organs in the body.

In a certain well-known university, from among those who matriculated in the first-year class, a group of students was selected for an experiment. Half of this group was given regular, systematic exercise for four years. The other half limited its physical activity to the routine of the campus, which, after all, among young people is considerable. At the end of the four-year period the exercised group outclassed the controlled group in every way—physically, mentally, and health-wise. Similar experiments performed by different men in different countries definitely substantiate these results.

A certain investigator measured the endurance of the muscles of his forearm in a scientific and accurate manner. He carried on a systematic programme of muscular exercise, and demonstrated that his endurance improved gradually for a relatively long period of time. At the end of four and a half years he reached a high point of endurance equal to 500 per cent of his original endurance.

Another investigator increased his endurance 319 per cent in fifty-two days of training. His training was of a more severe type than that engaged in by the individual previously mentioned. This man also found that within two months after the cessation of daily training, the work capacity of his muscles had already fallen to one-third of the maximum attained in training.

Certain practical information may be obtained from these experiments. In the first place, the muscle strength and muscle endurance can be defi-

nately increased at a rate proportional to the severity of the training programme. Second, if the regular programme stops, it leads to a definite diminution in the function of muscles and in their endurance. Among amateur athletes it is a well-recognized fact that a two or three weeks' recess from a daily programme of training places the individual practically into the group of untrained subjects. After such a period of rest it becomes necessary for him to re-establish his superior physical ability by following a programme of systematic exercises.

Observations from other experiments demonstrate that the number of red blood cells and the amount of haemoglobin present in the blood can be very definitely increased by well-regulated exercise. Stabled horses, for example, have about four million red cells per cubic millimeter of blood, whereas trained horses may have a red cell count as high as twelve million for the same amount of blood. The haemoglobin content of the blood bears a direct ratio to the number of red cells. Such an increase of red blood cells cannot be exactly duplicated in the human subject, but in principle it applies and is one of the reasons why trained

subjects can furnish to active muscles more oxygen per minute than would be possible in untrained subjects. They have more cells present to carry the needed oxygen.

In the past there has been an erroneous belief that exercise, particularly of a more or less strenuous nature, diminished heart function and produced large hearts, which were commonly labeled "athlete's hearts." It is possible to have the heart damaged by very strenuous exercise in untrained subjects. On the other hand, the hearts of well-trained athletes are firmer, smaller, and better pumps than the hearts of untrained and sedentary individuals.

"Action is a law of our being. Every organ of the body has its appointed work, upon the performance of which its development and strength depend. The normal action of all the organs gives strength and vigour, while the tendency of disuse is toward decay and death. . . . Inactivity is a fruitful cause of disease. Exercise quickens and equalizes the circulation of the blood, but in idleness the blood does not circulate freely, and the changes in it, so necessary to life and health, do not take place."—*Your Home and Health*, p. 191.



"Getting-up exercises" in the morning are helpful in keeping the digestive tract active.



MAN has always been aware of the presence of blood in his body. However, he has not always known of what blood is composed or how it functions. He was even ignorant of the plan of circulation of the blood until comparatively recent times.

In 340 B.C. Praxagoras, a physician of the famous Alexandrian school, noted that the pulse could be felt only in the arteries. He believed the arteries contained air, and that only the veins contained blood. This view held sway for several hundred years until in A.D. 130 Galen proved by experiment that the arteries also contained blood.

For many centuries the mode of circulation of the blood was a mystery. Nowadays even school children understand the rudiments of physiology, but it was not until 1628 that the modern concepts of blood circulation were given to the world by the great Dr. William Harvey.

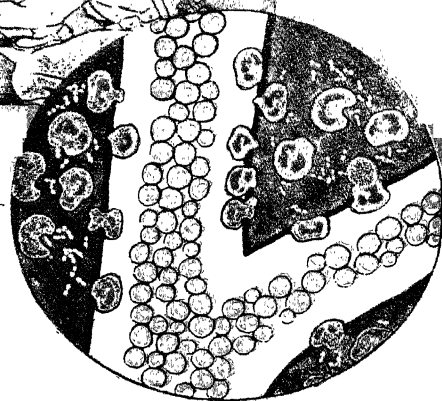
Prior to the advent of the microscope very little could be known of the structural components of blood. Swammerdam, in the year 1658, was the first actually to see the red blood cells. With the improvement of the microscope and with the development of chemistry, knowledge of the structure and function of the blood has accumulated quite rapidly.

Blood forms about eight per cent of the body weight, which means that an average man of 150 pounds possesses about six quarts of blood. Blood is composed of a fluid portion and a solid portion, or formed elements. The fluid portion is known

as plasma and comprises about fifty-five per cent of the total quantity of blood. The formed elements include the red blood cells, white blood cells, and blood platelets.

Blood cells grow and change their shape and structure as they mature.

A young cell always has a cell body and a nucleus (central spot). The red blood cells lose their nuclei as they become mature, and normally it is only the mature red cells that



LEE J. RICHARDS, M.D.

"Blood"

are found in the blood stream. In certain diseases, however, the finding of young red cells in the blood stream is of great value in establishing a diagnosis.

In unborn and newborn children the red blood cells are formed in the liver, spleen, and marrow. In the adult they are formed chiefly in the red marrow, which is found in the ends of long bones, in the sternum, skull bones, and in the vertebrae. Actually, the red cells are formed from cells lining the blood vessels in the marrow. In the normal individual they develop to maturity

while still in the bone marrow, and then leave it to enter the general blood stream.

An individual red cell is a minute structure, its average diameter being only 7.2 microns (25,400 microns make an inch). These individual cells are composed of water, proteins, iron, fats, and salts. One of the chief proteins is haemoglobin, which consists partly of an iron-containing pigment, haeme. The colour of red cells is dependent on the amount of haemoglobin present.

The chief function of red blood cells is to assure proper respiration

of the tissues of the body by transporting oxygen to them and taking carbon dioxide away. Hæmoglobin is the essential constituent that enables them to carry on this function.

It is in the lungs that the hæmoglobin of the red cells combines with oxygen, which is then carried to all the tissues of the body. In the tissues the oxygen is liberated and used for purposes of carrying on cell life. As the oxygen is given off, the hæmoglobin takes on carbon dioxide, which is a waste product of tissue cells. This is transported back to the lungs, where it is given up and exhaled by the individual as more oxygen is again taken on by the hæmoglobin. In addition to transporting oxygen and carbon dioxide, hæmoglobin is important in maintaining the proper degree of alkalinity of the blood.

In anæmia there is a reduction in the normal number of red blood cells or of the amount of hæmoglobin, or both. As a result, the tissues receive less oxygen than they normally require. And then the individual tires easily, feels chronically fatigued, and may have dizzy spells.

Iron is essential in the production of hæmoglobin. Thus a diet deficient in iron will lead to anæmia and the symptoms mentioned above. The severity of symptoms depends, of course, on the degree of hæmoglobin depletion and may vary from slight fatigue to actual faintness. Secondary symptoms referable to the heart and other organs may also occur.

Reference was made to the fact that iron must be available for

may lead to iron deficiency. Pregnancy increases the need for iron. People with peptic ulcers or hæmorrhoids may lose repeated small amounts of blood and thus become deficient in hæmoglobin and iron. Also as the result of menstruation, women often require increased amounts of iron. Protection against this deficiency is quite easily met by dietary means. Apricots and eggs are among the best of hæmoglobin producers, because of their high iron content. Raisins and spinach also contain considerable amounts of iron.

It is interesting to note that the life span of a red blood cell averages about one month. This implies that about ten million red cells perish every second. If one considers the fragile structure of the cells, together with the stress to which they are subjected, it is not surprising that they do not last longer. Countless times a day they collide with each other and with the walls of blood vessels. Often they are squeezed into abnormal shapes to pass through tiny capillaries. Numerous times a day they enter the heart, only to be catapulted out into the arteries at high speed. The older cells cannot continue under such strain, and eventually become useless by disintegration in the blood stream.

In addition to the large numbers that disintegrate in the blood stream, many are also removed and destroyed in the spleen. In different parts of the body there are cells

The white blood cells are concerned chiefly in protecting the body against infection. In contrast with red blood cells, they function chiefly in the body tissues and not in the blood stream, which they use only for transportation. The average number of white blood cells is much less than that of the red cells, there being about one white cell for every six hundred red blood cells. As a general rule, the life span of white cells is short, and often they live only a few hours. In response to infection, many additional white cells are quickly mobilized. They tend to combat the infection, and limit it to as small an area as possible. This accounts for the increased white blood cell count in infections, such as appendicitis.

The white cells are formed in several places in the body—some in the bone marrow and others in the spleen and lymph nodes. Many meet their end by being broken down in the spleen and liver in much the same way as the red cells do. Others are lost by passing out of the body through the digestive, urinary, or respiratory tracts.

Platelets are small irregular bodies found in the blood stream which are important in the clotting of blood. A deficiency of platelets may account for abnormal bleeding tendencies.

In summary, then, we have noted the following:

1. A few historical facts about blood.
2. Blood is composed of plasma and formed elements.

IS ALL THINGS TO THE TISSUES'

hæmoglobin production. Physiologists call iron the "keystone for hæmoglobin construction," and state that unless it is present in adequate amounts, the development of cells is retarded, and the number discharged from the marrow into the general circulation is reduced. Ordinarily a well-rounded diet contains sufficient iron. However, milk is deficient in this substance, and for that reason infants or adults who favour a milk diet should be given supplementary iron.

Certain diseases of the intestines decrease the absorption of iron and

known as reticulo-endothelial cells. Among other functions of the reticulo-endothelial cells, especially those in the spleen, is that of reclamation depots, where the old and disintegrated red blood cells are removed from the blood stream. The hæmoglobin that was in these cells is broken into its various components, and the iron is saved for future use. This reclamation of iron and its use in making more hæmoglobin accounts for the fact that relatively small amounts of iron are needed daily in the diet. But these small amounts are essential.

3. Red blood cells are formed in red bone marrow.

4. The chief function of blood is to carry oxygen, and this is done by way of its hæmoglobin content.

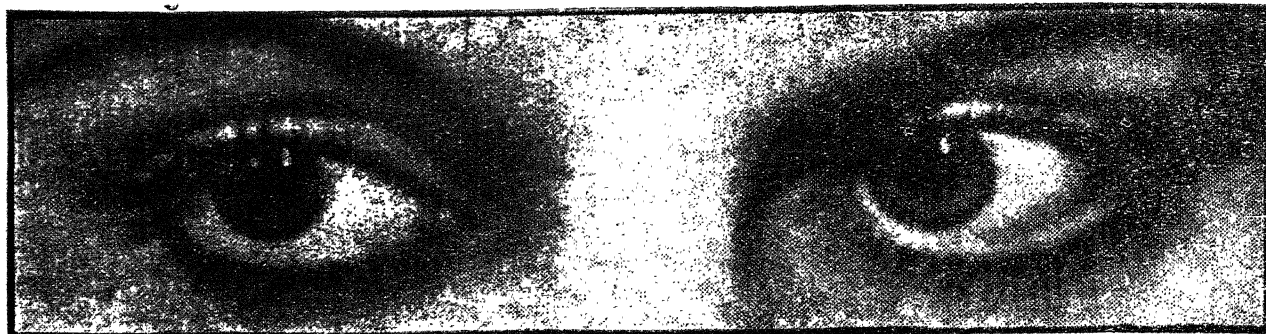
5. Iron is essential for hæmoglobin formation.

6. Important dietary sources of iron are apricots, eggs, raisins, and spinach.

7. Iron is salvaged for further use.

8. The function of white blood cells is to provide defence against infection.

9. Blood platelets are important in the clotting of blood.



- * You can walk with a wooden leg.
- * You can chew your food with artificial teeth.
- * But you can't see with a glass eye.

WHEN this statement was made more than a score of years ago, everyone interested in visual welfare applauded. Here, it seemed, was the one unquestionable reason why all should be concerned with eye care.

But little did anyone fancy that the day would come, as it now has, when some near-blind persons would actually be enabled to see with glass eyes. Startling, but true!

When the cornea, or window of the eye, has been scratched or has been disfigured by disease, sight is distorted or limited. A glass (or plastic) shell is fitted over this area. Its edges rest on the white of the eye. Between it and the irregular cornea, a salt solution is poured to even up the imperfections, and the cornea (while the shell is in place) no longer distorts the vision. Sight is improved, and sometimes becomes well-nigh perfect. Sight restored with a glass eye!

At first, contact lenses, as they are called, could be worn for only an hour or two. With improvements in the technique of fitting, the time was lengthened to four or five hours. Cases have been reported of individuals who wear their contact lenses for eight to ten hours. The goal now is to make them so they can be worn all day.

These lenses are a godsend not only to those whose sight can be restored in no other way, but also to some who have good eyesight. They are worn by actors, sportsmen, lecturers, and others whose appearance is important in earning a livelihood.

During the past few years there has been a remarkable advance in

HOW ARE YOUR EYES?

HARRIS GRUMAN, M.D.

the science and art of optometry. Even in an examination for the most ordinary case of near-sightedness, the specialist uses complicated machines and the prescription is translated into glasses by men who have made the art of spectacle-lens grinding their life-work and the appearance of glasses their pride. Non-shatterable lenses are already here; unbreakable lenses are not far off; and the new magnesium fluoride-coated lenses are far less visible than the ordinary type. The wearer's eyes are clearer and appear more natural to the observer—a boon to patients who must wear strong, heavy lenses.

Unusual results in regaining vision are at times secured with telescopic glasses. These miniature opera glasses have improved sight for some whose eyes were so far gone that not one of the millions of lens combinations in the trial case cabinet would give the desired effect.

Then there is a drooping of one or both lids, either as a result of disease or accident, and sight will be impaired though the eye be nearly perfect. In this condition, a so-called ptosis crutch has proved effective.

This consists of a strand of platinum wire shaped to fit the eyelid and soldered to the eye-wire of the spectacle frame. When the glasses are worn, the lid is raised and the eye can function. The appearance is practically normal.

Among other dramatic new developments is the relief now given to those suffering with anisocoria. For years the specialists had been baffled by persons whose eyes had apparently been given the most perfect ophthalmic corrections and who nevertheless continued to suffer from all the usual eye-tension symptoms of headaches, nervousness, sties, indigestion, and that tired-out, all-in feeling. Finally, the problem was solved, not by one man nor by a group of men from a single profession, but by a combination: an engineer, a mathematician, a psychologist, an optometrist, some physicians, a physicist, and a lens designer. Combining their talents, these experts constructed a machine to measure differences in the size of ocular images and developed a technique for grinding lenses to correct these differences.

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This shows the importance of co-operation among the professions to reach a desired goal. As some of medicine's greatest discoveries have not been made by physicians at all, so in optometry, progress has been attained through the combined contributions of psychologists, engineers, physicians, chemists, mathematicians, surgeons, neurologists, and psychiatrists.

A new way to improve eyesight is through scientifically directed eye exercise. This does not consist of indiscriminate rolling of the eyes, as one might gather from certain articles that appear in lay literature from time to time. Rather it is properly directed and supervised visual training. Exercise implies the idea of building up or strengthening the muscles. Actually the object of visual training, or orthoptics, as it is sometimes designated, is not to strengthen but to train muscles. Just as we train or teach our fingers to co-ordinate when typing or playing the piano, so the orthoptist trains eyes to see better by teaching them to work with each other smoothly, easily, and comfortably.

The eyes are like a team of horses. Any farmer can tell you what happens if the animals are not properly matched. Unless there is perfect synchronization between the two eyes, trouble in one form or another ensues. There may be the usual complaints of headache, indigestion, nervousness, or sties, or the patient may suffer no inconvenience. He will simply cease to use one eye, in which case it will often turn in or out.

This was the case with little Marian F, aged six. She was a beautiful child with long curly locks and dark brown eyes that gazed unconcernedly—one straight, the other in toward the nose. Her mother was broken-hearted in her anxiety. "To think that my little Marian has eyes that are not straight," she moaned. She did not use the word "crossed," but we knew what was in a mother's heart. "Oh, what can you do about this," she pleaded, almost too overcome with apprehension to speak.

The examination disclosed an uneven use of the two eyes. Glasses alone would be insufficient. Visual training must be instituted, and at once. The eyes must be taught, each to fix and rotate smoothly, and to perceive and fuse simultaneously with its mate. The subnormal sight of the right eye would have to be

forced into improvement, and binocular efficiency would have to be developed to a point where adequate stereopsis, or depth perception, was achieved. This was quite an order, but one that appeared possible to fill with complete co-operation by parent and patient.

Within a week the versions and rotations were satisfactory. In a few weeks the two eyes were able to blend colours. Now started the long hard grind—to coax those orbs to see objects as one with both eyes functioning. Marian was a conscientious little patient. She tried and she persevered. Looking into the eyepieces of an instrument in appearance not unlike the stereoscope grandma used to have in the parlour, she saw the picture of a bird and a cage. But the bird simply would not go into the cage, the desired objective of the exercise.

There followed many days of seemingly futile effort, and then one day with the assistance of prismatic lenses the objective was attained, if for only a few fleeting seconds. "I've got it," she cried exultantly, and as she did we saw that the little girl's eyes had straightened. Now the problem was to make the bird stay put longer, then to reduce the strength of the prisms, and finally to develop sufficient breadth of fusion so that in everyday use these eyes would act as good eyes should. This was not easy to attain, but now skip a few years and look in on Marian at school. She wears no glasses (except for long study), is an excel-

lent reader, and is literally a "bright-eyed youngster."

Marian's was an exceptionally favourable case. Not all yield so completely to orthoptic training, but in all instances the chances for success are increased where professional attention is supplied early enough.

In the correction of cross eyes (squint), in the development of sight in amblyopia (sleeping eye), and in the betterment of some near-sighted conditions, visual training has achieved outstanding success. During the war it was used with telling results in teaching pilots to see faster. In peacetime it is used in teaching children to read more quickly and with greater accuracy. In countless instances orthoptics has stepped in to aid humanity's overworked eyes where either glasses alone or other means have been insufficient.

Eye safety lies not alone in securing professional attention when needed, but also in safeguarding the eyes in numerous other respects. Too many work with improper, insufficient, or too much light. Insufficient light causes strain. Improperly directed light creates shadows. Too much light causes glare. How does one know when the light is proper? By the absence of shadows and glare. The light metre can tell the exact amount of light at your desk or work table. A simple method is to examine your lighting critically. If you can work at your desk without shadows or glare, if your eyes do not tire too easily, your lights are probably satisfactory.

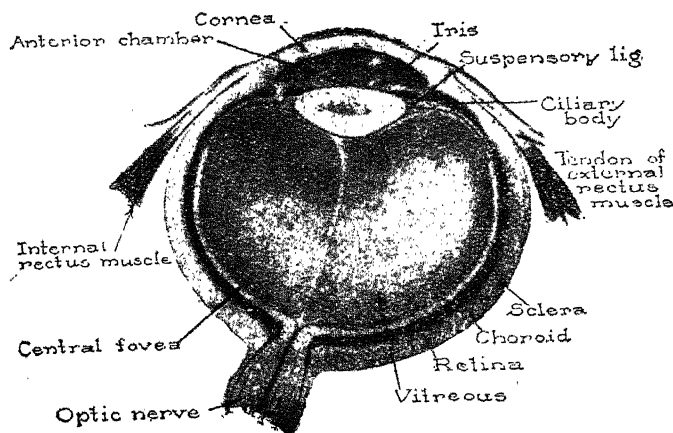


Diagram of the human eye.

Four Essential Minerals

There are seventeen or more mineral elements in the body, thirteen of which are known to be absolutely essential. If we obtain adequate amounts of calcium, phosphorus, iron, and iodine each day in our foods, it is likely that we shall not be lacking in the other mineral elements.

J. Wayne McFarland, M.D.

	CALCIUM	PHOSPHORUS	IRON	IODINE
Amount in Body	1.5% of body weight. 99% of this in bones. (About 2 1/4 pounds in average man.)	Calcium and phosphorus comprise 95% of minerals found in bones. Twice as much calcium and phosphorus in body as all other minerals put together.	Total amount of iron found in the body is less than the weight of one pie. About 3 grams in actual weight, or .004% of body composition.	Only 1/100 as much iodine as iron in the body—less than a grain of wheat. About 25 milligrams of iodine in whole body.
Uses in Body	Contributes to formation of strong bones and teeth. Helps to clot blood, regulate heartbeat, maintain mineral balance in all body tissues. Calcium, phosphorus, and vitamin D help prevent softening of bones as occurs in rickets.	Combined with calcium, helps form and maintain bones and teeth. Found in nucleus of each cell. Assists body cells to absorb food and get rid of wastes. Abundant in nervous tissue (brain and nerve cells). Found in blood stream and muscle tissue. Essential to normal glandular system.	Small amount of iron in all body cells. Most of iron in red blood cells. Helps to form haemoglobin—red colouring matter of red blood cells. Vital to transporting oxygen to every body cell. Insufficient iron in diet causes anaemia.	Essential to thyroid gland in making a hormone which regulates the rate food is burned in the body. This hormone is important for proper growth and development. Deficiency of iodine causes simple goitre, an enlargement of thyroid gland—prevalent in many parts of the world.
Daily Needs	Calcium in foods is measured in grams. One ounce equals about 30 grams. ADULTS .8 gm. CHILDREN 1.0 to 1.4 gm. During Pregnancy and Lactation 1.5 to 2 gm.	Phosphorus in foods is measured in grams. One ounce equals about 30 grams. ADULTS .88 to 1.5 gm. CHILDREN 1.0 to 1.6 gm. During Pregnancy and Lactation 1.5 to 2 gm.	Iron is measured in milligrams. Head of common pin weighs about one milligram. ADULTS 12 mg. CHILDREN 8-12 mg. During Pregnancy and Lactation 15-18 mg.	Iodine is measured in milligrams; 1,000 milligrams=one gram. Estimated .05 to 0.1 milligrams per day
Good Sources	Grams of Calcium per 100 grams fresh substance (100 grams=about 3 1/2 oz.) Milk and milk products (1 qt. of milk provides 1 gm. of calcium) Green leafy vegetables: Turnip greens .35 Mustard greens .25 Collards .20 Kale .18 Molasses .25 Almonds .25 Soybeans, dried .23 Figs, dried .16 Beans, dried .15	Grams of Phosphorus per 100 grams fresh substance (100 grams=about 3 1/2 oz.) Soybeans .66 Egg yolk .59 Beans, dried .46 Almonds .45 Peas, dried .41 Peanuts .39 Oatmeal .38 Dal .38	Milligrams of iron per 100 grams fresh substance (100 grams=about 3 1/2 oz.) Beans, dried 10.5 Egg yolk 8.6 Fruits, dried Apricots 7.6 Peaches 6.1 Prunes 2.8 Molasses 7.3 Peas, dried, split 5.7 Whole-grain cereals, breads: Oatmeal 5.2 Entire grain cereal 5.0 Green leafy vegetables: Chard, kale, turnip tops 2.5-3.5	Iodized salt Sea foods Green leafy vegetables grown near seashore, or in soil not depleted of iodine content. Note.—Knowledge is lacking of exact amounts of iodine in many foods, owing to difficulty of measuring such minute quantities.

But to a calorie-conscious public it is well to know why calories count in our every-day lives.

S. B. WHITEHEAD, D.Sc.

IN THESE days of food-consciousness, "calorie" is a word which we meet increasingly in government reports and newspaper reading. It is one of those words which implies much and yet means little, especially to the housewife who has to juggle with the family's weekly fare. Nevertheless, a working understanding of calories may prove helpful in balancing meals and menus to suit individual needs.

Actually you will never see a calorie. It is a standard of measurement, defined as the amount of heat required to raise the temperature of one kilogram of water one degree centigrade. Heat is latent energy to be found in all substances which can be oxidized or burnt. Coal, for example, provides nearly 16,000 calories per pound. Similarly, the energy-giving or fuel value of foods can be expressed in terms of calories.

Body warmth and energy are generated when the foods we have eaten, digested, and assimilated are oxidized or burnt in the tissues. The harder we work, the quicker our metabolism, the colder the temperature, and the greater the surface area of the body, the more food calories we need. Thus the calorie has become a yardstick of nutrition.

The amount of heat or energy expended in a given time under varying conditions of activity and temperatures can be estimated by means of a calorimeter. At rest, a man needs about 1,700 calories per day, and this low level is termed the basal metabolism. With increased activity the calorie requirement increases, so that a sedentary man requires 2,500 calories, a moderately active man 3,000, and a very active man 4,500 per day. His wife and his children generally require fewer calories as they are smaller, but as the table shows, boys and girls in their teens may require more calories than their parents.

Every food provides some calories, but its total calories depend upon its content of protein, carbohydrate, and fat. One gram of protein is said to yield 4.1 calories; one

gram of carbohydrate, 4.1 calories; and one gram of fat 9.3 calories.

Obviously fat-rich foods provide the most calories. Olive oil, nut butters, etc., give 264 calories per ounce, but it would be foolish to try to obtain all our calories from fat. It would be difficult to digest all at once, and it would leave other vital nutritional needs of the body unsatisfied. The same is true if we try to obtain all or most of our calories either from proteins or carbohydrates.

The fewer the total calories available to us, the more important does their selection become in influencing our welfare. The most essential calories come in the form of proteins. We cannot do without a minimum of protein if the body is to be kept in good cellular repair and renewal. At least ten calories out of every hundred should be in the form of protein.

A mother needs twelve to twenty per cent less protein than her husband or her adolescent children, but if she is an expectant or nursing mother then her protein needs to go up to well over half as much again.

The remaining calories may be split to twenty-five calories supplied by fats and sixty-five calories by carbohydrates. Fat is indispensable to maintaining a steady basal metabolism and to certain health-protective functions.

In reviving a starved body, carbohydrates are needed last. Conversely, they are the food elements we can most easily spare with least damage to the body. A sedentary mother, for example, can afford to give up her piece of cake, second helping of pudding, porridge, or preserve either to her hard-working

husband or energetic children, since her calorific need is much less. Even in pregnancy and lactation, her need for sweet or starchy food is not so paramount as her need for good proteins and sufficient fat.

If calories were all there were to nutrition, healthful feeding would be comparatively easy. Oil, wood, and coal provide far more calories at cheaper prices than foods, but obviously they are of no use to us since we cannot convert them into energy. Similarly, the only calories that count in energizing the body are those which are turned by digestion, assimilation, and metabolism into heat.

For this reason, it is impossible to live on proteins, fats, and carbohydrates alone; they must be accompanied by the health-giving and regulating food factors, the vitamins and minerals. The proper digestion and assimilation of carbohydrates requires adequate vitamin B; fats must be supplemented by vitamins A and D, and the proper metabolism of proteins depends upon an adequate supply of minerals in the blood.

In the general daily needs of vitamins and minerals there is little difference between father, mother, adolescent son or daughter. In everyday living, therefore, this means that in such food as fruits, vegetables, leafy greens, and salads, all the family should share alike.

The chief exception is that the more active require more vitamin B₁ which they should receive in more whole cereals and the like provided for greater energy. Then again, the vitamin and mineral needs of an expectant and nursing mother are greater than in normal life.

DAILY CALORIE NEEDS OF A FAMILY

Member	Calories	Protein in Grams
Husband (154 lbs. weight)		
Sedentary	2,500	70
Moderately Active	3,000	72
Very Active	4,500	75
Wife (about 123 lbs.)		
Sedentary	2,100	60
Moderately Active	2,500	68
Very Active	3,000	70
Expectant	2,500	85
Nursing	3,000	100
Boy—		
10-12 years	2,500	70
13-15 years	3,200	85
16-20 years	3,800	100
Girl—		
10-12 years	2,500	70
13-15 years	2,800	80
16-20 years	2,400	75

IT IS a happy circumstance that nature has been fit to make eating and drinking enjoyable. They are necessary actions which recur so often. Indeed the pleasures of the table are such that few of us can resist all the time the temptation to pander to acquired tastes and live for their satiation. In doing so, however, we run the risk of forgetting that primarily we must eat and drink to live and to keep well.

Appetite and hunger are relatively easy to satisfy, demanding little more than a full stomach. To civilized man, however, they are poor guides in choosing the foods and drinks to meet his real nutritional needs.

Even in these days of rationing and restriction the average adult consumes his own weight in food and drink at least once every thirty days, and exercises considerable freedom of choice in what he takes. From what he eats and drinks his body will absorb what it needs for the repair and renewal of its substance, for the generation of heat and energy, and for its health-protection and regulation. The extent and success to which these needs are met depend primarily upon the kind, quality, and quantity of the raw nutritional materials which we get in our meals.

OUR DAILY MENU

As far as kind is concerned, the practical import of all our modern knowledge on nutrition is simply that our daily menu should be based on fruits, fresh and dried, salads, fresh vegetables, milk, dairy produce, eggs, whole wheat bread, whole cereal foods, and plant proteins. At least up to ninety per cent of the menu should consist of these foods if the real nutritional requirements of the living body are to be met.

Quality is important because the quality of our food largely accounts for its content of vitamins and minerals. Here, our new knowledge of nutrition indicates that the fresher our foods, the better. Admittedly, modern methods of food preservation in canning, freezing, and storing, go far in minimizing vital food losses, but losses do occur. As far as is practical we should at least eat fresh foods in their season, and as soon after they are gathered as possible. In stored foods, such as cereals, quality may be related to the wholeness of the product. Brown rice is

We

must

Eat

greater nutritional quality than
lished, brown sugar than white,
ole wheat bread than white, and
so on.

ANGER OF OVER-EATING

When kind and quality are given precedence, quantity is of less importance. To eat and drink too much over-burdens the digestion, impedes the efficiency of the body, and predisposes it to breakdown and disease. To eat less than capacity brings no such perils in its train. Physically and mentally we are healthier and more efficient when we eat and drink rather less than is necessary to maintain our full body weight for our age, height, and sex.

Apart from this, the amount of nourishment we take should be related to the work we do, and the clime and season we are living in. Broadly, the more active we are physically, the more food we need. The colder the clime or the season, the more fuel food we require to maintain body heat. This applies chiefly to foods rich in fats, starches, and sugar. The sedentary person needs less of these foods than the manual worker. Both need to maintain their intake of vitamins and minerals at the highest level.

But ill-health from errors in nutrition does not stem from eating the wrong foods alone. Much depends upon our habits. Even the right foods are of no value to us until they have been assimilated into the blood stream, and assimilation must wait upon digestion.

S. B. WHITEHEAD,



PHASES OF DIGESTION

Digestion is a four-phase process. It begins in the mouth, where, by mastication the cells of food are torn open and exposed to digestive secretions, and mixed with the secretions of the salivary glands which begin the conversion of starch into assimilable sugar. The second phase begins in the stomach where gastric secretions convert other food elements, particularly proteins, into assimilable form. The third phase goes forward in the duodenum in which bile from the liver begins the conversion of fats and juices from the pancreas and has a leavening effect upon the digestion of the food mass as a whole. The fourth phase embraces the completion of digestion, and the assimilation of nutrients in the intestines, complemented by the elimination of wastes.

and

Drink

SLOW EATING ESSENTIAL

Each phase depends upon the successful conclusion of the preceding ones. But the key phase is mastication. Habits which contribute to skimpy mastication, hasty swallowing, and gulping down of food are apt to lead to digestive illness in time, to say little of the nutritional impairment of the body all the time. To eat slowly, chewing, and savouring each mouthful, adds to the enjoyment of the food and fosters its perfect digestion.

WHEN TO DRINK

The habit of drinking with meals is to be condemned chiefly when it leads to premature swilling down of solid food. There is no real physiological reason why food and drink should not go together, if the food is properly masticated and the drink sipped and slewed around the mouth before swallowing. Any dilution of gastric juices is very temporary for fluid is quickly transmitted through the system. The habit of drinking before, or after, courses of solid food

is, however, a good one in that it promotes more thorough mastication.

MEAL TIME MUST BE A HAPPY TIME

Again, when we eat, our food should have our undivided attention. No function of the body is more sensitive to our mental or emotional state than digestion. The table is not the place to discuss business or domestic problems, or to attempt to occupy the mind with reading matter or radio. It is better not to eat at all when emotionally upset or over-tired, for the digestion is unequal to the strain put on it. A meal time should be a happy occasion with the mind fully relaxed. Congenial surroundings, good table appointments and the general atmosphere in which meals are taken, contribute much to good digestion.

The frequency with which we eat and drink is a matter of individuality. Most people tend to conform to the rule of "three square meals a day," but this is a rule of habit and convenience rather than of need. Research indicates that many people, particularly women, would do better if they ate more frequently but smaller meals, provided that a good nutritional balance is maintained. On the other hand, older people often find it sufficient to eat full meals at long intervals, with a snack meal or food-beverage in between. The speed of digestion varies, and it is best to eat according to individual prompting than to conventional rule.

PREPARATION OF FOOD

The digestibility of a meal is influenced by the way in which the food is prepared. Cooking is really a process of pre-digestion. It involves the use of heat to make food elements more easily digested and more palatable. Baking is undoubtedly the best method. Steamed foods are better than boiled. Fried fare should, however, be eaten sparingly since the free fat mixed with other elements has to wait for digestion until it reaches the duodenum. It is not easy to separate the other elements from it in the stomach, and delay generally means trouble.

Given the right foods, rightly prepared and rightly eaten, the body has no difficulty in renewing its substance healthfully for it is built and equipped to do just that, simply and efficiently, day in and day out.



PNEUMONIA in its various forms is a very common disease. It is the most fatal of the commoner acute infectious diseases, statistically holding third place in the list of the "captains of death." It is outranked by heart disease and cancer, which are ordinarily classed as chronic and degenerative. Consequently, pneumonia has the well-deserved reputation as the great villain among the acute diseases.

Pneumonia is ordinarily an infectious disease, caused by the invasion of the lungs by certain micro-organisms. Even though it is not sufficiently contagious to be classified definitely with contagious diseases, wherever micro-organisms are involved as causative agents there is danger of transmission from one individual to another.

Pneumonia affects all ages, but is more common in the earlier decades of life. On the other hand, at the two extremes of life the mortality is the greatest. Pneumonia in infants carries a high mortality; younger people beyond the age of infancy who become afflicted usually get well if they are properly cared for; those beyond the fifth decade of life have a much poorer chance; and to the aged pneumonia is often fatal.

For purposes of clarity, let us divide pneumonia into two groups, broncho-pneumonia and lobar pneumonia. Broncho-pneumonia is so called from the fact that the area involved is located around or near the air passages, or bronchi, as they penetrate into the lung tissue. The disease is frequently a complication of some other condition, and may be caused by a number of different types of organisms present in the respiratory passages in association with some other primary respiratory infection. The pneumonia that follows a "common cold," bronchitis, measles, influenza, whooping cough, etc., is usually of this variety. Therefore, it is the rule that broncho-pneumonia has a more or less gradual onset, and is usually a complication rather than a primary disease.

Whether the patient be you, your child, or your friend, if there exists any type of respiratory infection, regardless of its apparent harmlessness, remember that broncho-

pneumonia may follow as a possible complication. For your convenience we give the cardinal signs and symptoms of its development:

1. Cough. If the patient has been having a cough, this symptom is frequently intensified. The cough need not necessarily be productive of sputum.

2. Shortness of breath. This symptom may be only slight or quite severe.

3. Increased rate of breathing. Any rate above 25 a minute should be a very suggestive finding. In severe cases the respiratory rate may increase in younger children to 70 or 80 a minute.

4. Fever. The temperature is usually of an up-and-down variety, making rather slow excursions from 101 degrees Fahrenheit to 104 degrees over a period of twenty-four hours.

5. Loss of strength. This is a common symptom of all toxic diseases, and is not limited to broncho-pneumonia; added to the preceding symptoms it has a definite significance.

With these points in mind, the methods of prevention of broncho-pneumonia are quite obvious.

1. Avoid any type of upper respiratory infection. Obviously, this is not always possible; but much can be done to diminish the incidence of such infection. There is insufficient space in this article to give detailed procedures for prevention; nevertheless, it is no secret that many such infections are definitely contagious, and that limitation of contacts with infected subjects is a valuable preventive measure. The better the general health of a person, the fewer respiratory infections he will have. As far as children are concerned, immunization from whooping cough is quite successful. This point is mentioned here for the reason that so many broncho-pneumonias in children are complications of whooping cough.

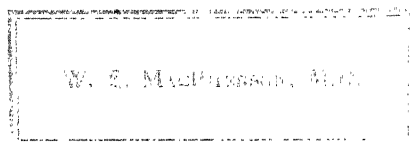
2. If you fall heir to a respiratory infection of any kind, and particularly if this infection is associated with a cough, make sure that you receive proper care. It may turn into broncho-pneumonia.

Lobar pneumonia receives its name from the fact that the area

involved is more or less limited to the boundaries of one or more lobes of the lungs. Unlike broncho-pneumonia, it is not usually a complication of some other pre-existing respiratory infection. Also, in contrast to broncho-pneumonia, the infecting germ is usually of a specific variety called pneumococcus.

Under normal conditions one may have a number of pneumococci in his respiratory passages, and yet not develop pneumonia. Under certain conditions, however, the virulence of these organisms may increase; and, if other factors make it possible for these organisms to grow, lobar pneumonia is a very possible result. It is also of value to recognize that organisms from an active case of pneumonia are probably more virulent than the ones that ordinarily inhabit the nose and throat. Therefore, it is wise to take ordinary precautions against the inhalation of respiratory-tract secretions of those who are suffering from the disease.

There are certain predisposing factors that are of interest from the standpoint of prevention. Lobar pneumonia is considerably more frequent during the winter months. In countries where the climate is cold and changeable, the incidence is greater than in warmer and more



equable climes; and it is more common in cities than in the country, regardless of the climate. Of particular significance is the fact that it is most common where large groups of persons are housed in crowded conditions, whether this be a temporary or a permanent arrangement. Exposure to cold and wet, particularly when the person is not exercising, is a common predisposing factor. It is not correct to state that alcoholism predisposes to the disease, but it is a fact that alcoholics who get pneumonia are much more likely to die than are non-alcoholics.

For your information, the onset of lobar pneumonia is usually sudden, and is associated with three definite symptoms, all of which are usually present and occur simultaneously or within a relatively short period of

time. These symptoms are as follows:

1. Chills and fever. The first chill is commonly sudden, and is immediately followed by a rapid rise in temperature.

2. Cough. To begin with, the cough is usually not productive of any sputum. When sputum does occur, it is small in amount and has a rusty colour.

3. Pain in the chest. There is always associated with lobar pneumonia a considerable amount of pleurisy. Therefore, pain in the chest is an almost invariable symptom.

Other symptoms and findings may occur, but it is not advisable to wait for them before receiving medical attention. It is important to remind you that great advancements have been made in the treatment of pneumonia, and the earlier the treatment is begun the more hopeful are the results.

The following two brief reports of actual cases that have come under my observation recently may help you to get a better idea of the possible predisposing causes of lobar pneumonia:

1. Mr. Stevens had been riding in a motor car for a number of hours during cold weather. The car window was down, and he had on insufficient clothing to keep warm. However, he had the good sense to go to his physician at first intimation that something was wrong with his chest. As a result, he came through his pneumonia all right.

2. Tom Connally got half drunk, and sat on the outside observation platform of an overland train almost all night, having a big time with some friends he met on the train. The temperature was not particularly cold, but was definitely chilly. Pneumonia got him, and he died.

In offering some advice on the prevention of lobar pneumonia, the following will be helpful:

1. Do not become unduly exposed to the cold without sufficient protection.

2. When such exposure is inevitable, keep the metabolic "fires" burning, and the circulation up to par by physical exercise.

3. Get properly dried and warmed immediately after such exposure.

4. Avoid cold, crowded quarters, during the "pneumonia months."

5. Avoid excessive fatigue.

Provides Meals for Millions

Research Projects Under Way in India and Other Countries

A FOOD concentrate, two ounces of which is said to provide a palatable meal containing one-third of the normal person's daily nutritional requirements, is now being distributed by thirty-two American relief agencies in twenty-one countries. This product, developed by an American nutritionist, is called Multi-Purpose Food (MPF). It is supplied to the relief agencies by the Meals for Millions Foundation, a non-profit organization established in July 1946, with headquarters in Los Angeles, California.

In a little over two years, according to the Foundation, these relief agencies have purchased at cost enough MPF from the Foundation to supply more than 7,500,000 meals abroad. In addition, the Foundation has donated more than 3,000,000 meals of MPF to these agencies, using funds given to it by many organizations and individuals in the United States.

Multi-Purpose Food was developed by Dr. Henry Borsook, a professor of biochemistry at the California Institute of Technology (Pasadena) in 1944, with the aid of research grants from the California Dehydrator's Association and a philanthropic California restaurant owner, Clifford Clinton, who created the non-profit Meals for Millions Foundation.

MPF, which looks like a cereal grain, is a soybean derivative, to which has been added onion powder, protein derivative, food yeast, artificial seasoning, salt, herbs and spices, minerals and vitamins, the Foundation explains. It may be used either as a meal in itself when boiled with water for ten minutes, or as a supplement to the regular diet. MPF has a meat-like taste when used by itself, and when added to another food takes on the taste and consistency of that food, the Foundation adds.

According to Dr. Borsook, "Two ounces (dry weight) of this food provides the approximate nutritive

equivalent of a serving of beef, a glass of milk, and a normal serving of green peas and potatoes. It is generally used as a base for native soups, stews, loaves, and many other dishes. It acquires the taste of added ingredients, thereby becoming acceptable to people of widely varying tastes."

ONE OF MPF'S ADVANTAGES

The Foundation notes that one of the advantages of MPF for use in overseas aid programmes is that it takes up little shipping space. For example, one boxcar of canned MPF, contributed by the Foundation to the "Friendship Train," which collected food in the United States for the people of France and Italy last year, contained 500,000 meals.

Voluntary contributions to the Foundation have been raised by church, civic, youth, and other groups in the United States. School children have contributed their pennies to the Foundation. Three pennies purchased enough MPF for one meal abroad.

The Foundation is financing further research on uses of MPF. At present such projects are being carried on in India, the Belgian Congo, China, Puerto Rico, Alaska, Austria, Germany, and in the United States.—USIS.

TEMPERANCE LEGISLATION OF THE METHODIST CHURCH

1. This Central Conference in session at Jubbulpore, "wishes to express its hearty approval of the Indian Government in enforcing the law of prohibition against strong drink, and pledges its whole-hearted support in carrying out the purpose of the law and in training the people through its Temperance Societies and Church and School organizations."

2. The clause in the Church Discipline against the use of tobacco by the ministry, has been retained.

3. "Resolved that our educational institutions, including primary and secondary schools, colleges, leader training schools, theological institutions, should be asked to include in their curriculum and extra-curricular activities, such instruction and such practical demonstrations of the evils of strong drink and the benefits of abstinence, and should enlist the young people studying in the institutions, in a campaign of temperance education for adults and children in the communities where the school is located, or where the students live."

4. "Be it further resolved that the collection taken on World's Temperance Sunday be given to the W.C.T.U. for the strengthening of its work."

CAN THIS BE THE CAUSE OF CANCER?

D. A. DELAFIELD AND WAYNE
McFARLAND, M.D.

MEDICAL science has solved the riddle of so many mysterious diseases that the world will not be too greatly surprised when the cause of cancer is found. Perhaps that day is not far away. Already a few rays of light seem to be shining through the grey dawn, and millions of cancer victims are looking expectantly to the doctor for help.

Our best medical workers are on the job day and night. Having reduced the death rate in such diseases as diphtheria, smallpox, tuberculosis, and pneumonia, these men of science will never be satisfied until they strike back at cancer too. What have they learned about the disease by research and experimentation? How near is medical science to solving the great mystery of the cause of cancer?

It has been known for some time that certain forms of this disease can be produced in animals by application and injections of certain substances including specific chemicals. But are chemicals the only guilty agents in the cause of this disease?

It seems quite certain that cancer is primarily a disease of civilization. According to Dr. Charles S. Cameron, medical and scientific director of the American Cancer Society, in a report made in early November of last year, the death rate from the disease increases in countries with a superior standard of living and high literacy rates; and in countries where the general death rate is low, the death rate from cancer is high. The death rate from the disease seems to be higher in urban than in rural areas, perhaps because of such factors as polluted air and smoke. This interesting aspect of the problem carries with it the implication that chemicals are a definite factor in the incidence of the disease.

But there are aspects to the problem that may come closer to solving the mystery. We refer to the virus

theory in the origin of cancer. Some time ago the editors of *Modern Medicine*, a well-known journal of diagnosis and treatment, published an article entitled "Experimental Breast Cancer," from data submitted by Dr. John J. Bittner, of the University of Minnesota. Dr. Bittner's experiments had to do with the genesis of mammary cancer in mice. "It is evident," the editors stated, "that several causative factors are involved" in producing the disease in these small animals. Among these was an inciting agent, the author said, which "it seems logical to classify... with the filterable viruses." In other words, "a living, virulent" organism of submicroscopic size is believed to be a factor in producing breast cancer among mice. This virus is transmitted to the young from the mother in nursing. Under certain specified conditions cancer can be developed if the virus is present in the body of the animal.

The experiments of Dr. Ryojun Kinoshita, of Osaka University, with rats, seems further to establish a virus as a contributing factor in the genesis of cancer. Under a powerful electron microscope Dr. Kinoshita has been able to photograph a virus which, in his judgment, is clearly associated with the disease. At an address given to the research staff at the National Cancer Institute in Bethesda, Maryland, last November, numerous photos of the virus were thrown on the screen. The manner in which Dr. Kinoshita discovered the virus in his experiments is most interesting, especially in view of the fact that it all happened by accident. "He had produced stomach cancer in a rat by one of the usual chemicals, then by chance injected the liver with the chemical, potassium arsenite. This caused a fluid to collect in the animal's stomach cavity.

"As a routine measure, Kinoshita transmitted this fluid to other rats and discovered it caused cancer. The

next step was to find the guilty agent in the fluid.

"Although he subjected the fluid to a centrifuge—a machine which separates solid particles from liquids—the centrifuged fluid still caused cancer. He then subjected the fluid to ultra-sound waves, on the chance these might destroy the cancer-causing agent. They did not.

"Finally, and most significant, he passed the fluid through a standard filter, known to eliminate cells and bacteria, and still produced cancer in rats twice out of seven attempts.

"Kinoshita then concluded the cancer-causing agent in the fluid must be a virus, an organism so tiny it will even pass through porcelain."

The work of Dr. Kinoshita offers an interesting contribution to research and science and deepens the conviction in the minds of some medical men that the virus factor in cancer is very real and may have some bearing on the disease in human beings.

It has been accepted as a fact that a virus is the cause of rabbit papilloma carcinoma and that the Rous virus is the inciting factor in chicken sarcoma. So far as the malady in chickens is concerned, it now seems to be conclusive that a form of cancer called lymphomatosis is an infectious disease evidently of virus origin. Dr. Nelson F. Waters, of the Department of Agriculture's Poultry Research Laboratory, at East Lansing, Michigan, has carried on research with chickens for eight years. He believes that this disease, which is similar to lymph cancer in human beings, is caused by a virus, and that it can be transmitted from one chicken to another. When Dr. Waters mixed non-cancerous chickens with cancerous stock, a large incidence of the disease resulted. Continuing his experiments, he found that among the non-cancerous chickens the responsible virus was never isolated.

Thus the evidence mounts up to demonstrate the relationship of cause and effect so far as virus and cancer are concerned. But as the editors of *Modern Medicine* stated when they prepared the article on Dr. Bittner's research, "whether or not these observations... may serve as a basis for the control of... cancer in humans must be determined by further study which may take years to complete."

While Dr. Bittner and others were experimenting on virus as a cause of cancer in animals, another physician in the West, Dr. John Gregory, was busy stalking what he conceived to be the cause of cancer in human beings. He reasoned that some of our most dangerous diseases, such as infantile paralysis and encephalitis, as well as such common diseases as measles, chicken pox, and the ordinary cold sore, were all due to these submicroscopic organisms. Why could not a malignant growth be caused by a virus too? If such growth in lower forms of life could be traced back to a virus, why not such malignancy in human beings?

After several years of research and experimentation, the doctor was prepared to announce in medical literature what he conceived to be the cause of human cancer. His report appeared in *Experimental Medicine and Surgery*, November, 1948. Writing concerning electron microscopic findings in malignant tissue, he describes the results obtained. The examinations included one thousand specimens of malignancy—all human. "In every instance," writes the doctor, "a virus-like substance has been found in all malignant tissue." Human tissue from one thousand benign tumours was examined, and no virus-like substance was found. "I have studied these objects now," stated the doctor, "for twenty months. Microscopically these objects have all the characteristics of virus: dis-

tinct cellular characteristics, cell wall, cytoplasm, and nuclei. They are spherical 0.1-0.3 microns and their size seems to be dependent on the tissue they come from.

"Biologically they are [have] the characteristics of virus. They multiply by cell division, can be cultured in eggs, and are destroyed by heat."

Monkeys injected with the special filtrate prepared from human cancer tissue developed cancer; mice and rats were also injected, and again cancerous tumours developed. This particular part of the research project must be carried out on many more animals to be certain that all the variable factors influencing cancerous growths have been accounted for.

The opportunity to show his work came at the recent meeting of the Southern Medical Association held in Miami, Florida. General practitioners, specialists, research workers, and medical critics eyed with interest the demonstration on the pathogenesis, or, in simple language, the cause of cancer. Here was a slide made from cancerous tissue of the skin. Another showed cancer of the stomach. Another was taken from cancer of the bloodstream. And in all of them there were the same small spheroid bodies, which when injected into animals would time and again produce a malignant growth.

Many are watching with intense

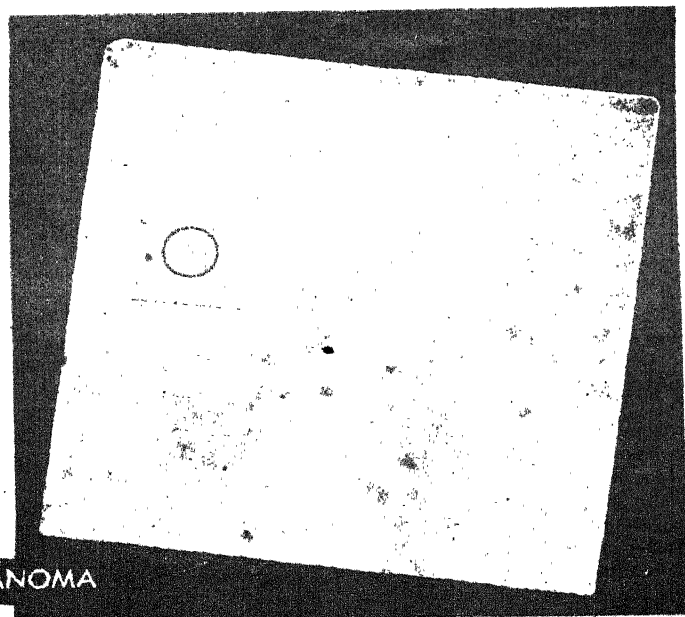
interest these studies undertaken by scientists who believe that an infection by some organism, probably virus, is the hidden link in the cause of cancer. The reasoning of some follows this line of thought.

Since we accept for a fact that in certain animals malignant growths are caused by virus, why should it be such a hurdle to consider cancer to be a virus disease in man? True it is that we have cells that are growing wild! But there must be a reason for their growing wild! Might it not be possible for these living organisms to lie dormant in the human system, only requiring trauma, or perhaps chemical substances such as the tars and many others, to start the virus on its deadly work? The cells then begin to grow wildly.

These impressions await confirmation, and if they can be proved, and the experiments already done can be duplicated, we have before us one of the greatest discoveries in the history of medicine. We hold our breath and ask, Can this be the cause of cancer?

An important finding at one cancer detection centre is that "thirty-six per cent of men and fifty-one per cent of women examinees were referred to their physician because medical or surgical conditions other than cancer were discovered."

Photograph taken by electron microscope showing spheroid bodies in a cancerous mole.



MALIGNANT MELANOMA



A WALK WITH OLD SETH

BEATRICE MURRAY

"JUST take a look at that funny bird," said Old Seth to Molly and Will, who were being taken for a walk through the New Zealand countryside by the old man.

The two children clapped their hands in delight as they ran ahead to get closer to a quaint-looking bird as big as a bantam fowl.

They turned and motioned the red and cheery-faced old man to catch up with them. "What is it called?" they asked together.

"It's a kiwi—and you can see it pictured on our sixpences," replied Old Seth, who had briskly run alongside his two small friends. They were now close to the bird and saw his long curved beak, and as he walked along like a fussy old gentleman he prodded the ground continually with his beak, either searching for his dinner or just because it was a habit of his.

"Look closely," said Old Seth, "and you'll see the kiwi is a bird without wings." And sure enough, the children noticed he had none at all.

"His cousin, the weka, is also wingless like the kiwi," went on Old Seth. "If you go carefully, you may see a weka in that long grass."

And they did. He was a brown bird, and not being timid like the kiwi, he came strutting toward them, twitching his tiny tail so queerly that Molly and Will laughed out loud at the funny sight. The weka gave a

frightened "squark" and ran speedily into the longer grass.

As the trio walked through the lovely countryside, Old Seth answered all their questions about the birds of New Zealand.

"Once," said he, "this country had some of the biggest birds in the world. One of these was a giant called the moa. It stood twice as high as a man and made the ostrich look puny. But today there are no birds such as the moa or the huia, but you can see them stuffed in our museums."

Old Seth brought Molly and Will back to the present sharply, pointing to a bird in a black suit with a white collar.

"That is the tui or the parson bird, and is our king of songsters." His song was like the tinkle of a silver bell.

Before they had gone much further, Old Seth pointed out another bell-bird, the kokako, and its voice was like a deep-toned bell, very solemn but quite musical.

The children heard the glorious singing of the warbler, the tiny riroriro. And as they were sitting on a log, a very tiny fellow came and looked at them from a stump.

"Oh, he never sings, little tom-tit miromiro," said Old Seth; "but he's a cheerful, friendly little fellow, isn't he?"

And then a bird, just as tame, came and perched on top of Old

Seth's head, then fluttered gracefully to the ground, where it ran to and fro to the delight of the children. He was a dainty grey bird with a long, fan-like tail—the little birairuka, Old Seth said it was.

Soon they were making their way back home, and they saw a very droll gentleman, the kaka, a small parrot, but Old Seth said the prettiest parrot was larger in a green, red, and yellow suit and was called the kea. The fleet-winged kingfisher flashed by in vivid blue, bright green, and rich yellow, and bright-plumaged parakeets mimicked the cheery laughter of the children as they happily trudged homeward after a pleasant outing in the New Zealand countryside.

TELL THEM WHY

ROSE E. POLLARD

"WHY should I clean my teeth regularly?" "Why should I wash my hands before a meal?" Every child asks such questions from time to time, and the mother who wants to inculcate the rules of good health realizes that it is always more effective to give *reasons*.

A rule without a reason is more easily broken and forgotten than a rule with a reason. Take tooth-brush drill. "Clean your teeth regularly because I want you to do so," is nothing to a child. But explain the need for good, strong teeth in the mastication of food so that the digestive processes work well, and John or Mary will begin to understand. You have only to enlarge on the attractiveness of sound white teeth as well, and most children will then go through tooth-brush drill with worthy aims in view.

THE "BANE" OF WASHING

Then there is the business of washing the hands before a meal. It takes a time to get some children—especially boys—convinced of the value of this part of the daily routine. Here is where you tell them how food can be harmful if contaminated with dirt and germs—which is possible if not-too-clean hands are brought to it.

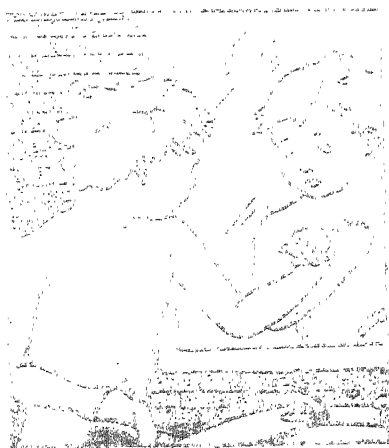
I always find it works well to set oneself as an example: How would they like to see Mother serving the food with hands not too clean, or cooking it without due care to cleanliness? Even the most stubborn boy

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will see light, if it is put in that way.

INTERNAL CLEANLINESS

Internal cleanliness is important too. No help in being frightening or aggressive about it. "You must be regular or you will be ill," arouses fear, and fear will often *cause* constipation. Explain how regularity ensures internal cleanliness in the same way that washing ensures external cleanliness. Show how the right foods encourage regularity—plenty of fresh salads and green vegetables, brown bread, and fruit—and how, too, the habit of drinking cold water is the best way to keep constipation at bay.



EXERCISE

Exercise is a sore point with some of these modern children, especially when it is a question of walking! "Why can't I take a bus? I don't like walking!" Explain how the movement of walking in the fresh air, exercising the muscles as it does, and enabling the lungs to be filled with fresh air, is both health-giving and invigorating.

FRESH AIR

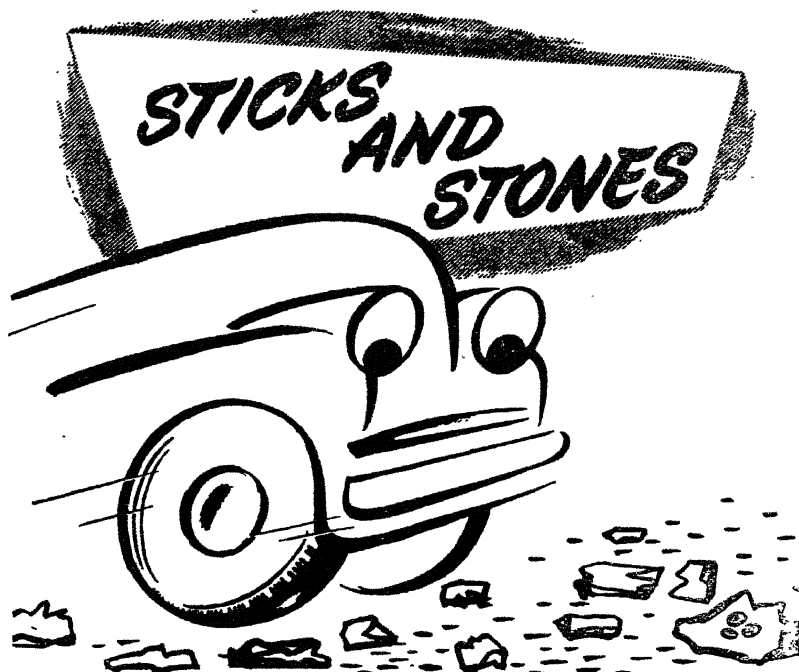
Then there is the need for fresh air. Brought up from babyhood accustomed to fresh air most children nowadays do know its value, but there are still a few who must ask: "But why should I have my bedroom window open at all?" or, "Why must I go out to play when I would rather sit inside the house?" Actually all children unless ill, should have *some* fresh air every day—barring of course, in times of weather extremes. It enables the tod-

ler to become "weather-trained" before school-age.

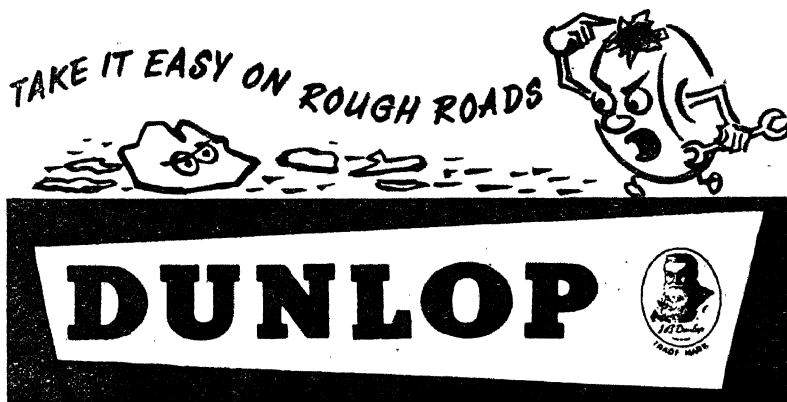
EARLY TO BED

"Why must I go to bed early?" It is the question that is most often on the children's lips. Nagging on about the necessity for going to bed early

without giving reasons, doesn't encourage co-operation. Try explaining in an interesting way how sleep is essential to growth, how the various parts of the body can only revive themselves in sleep, and how if children do not sleep long enough the development of mind and body will not be as good as it ought to be.



IMAGINE how I feel when I'm running along at top speed, and suddenly I hit a brick or a stone. It's like hitting the wall of a house—and just as dangerous for me. I'm a pretty resilient character, but things like that are liable to lay me out. So when you're on a rough road please go carefully and give me a chance to meet these lurking rocks on equal terms.



When it comes to the all-in question of, "Why is good health so necessary?" then is Mother's opportunity to put in wise words for the future. Health has been assessed as a contributory factor to success in any sphere, and, while it is a gift, it

has to be earned for and it has not to be abused. The home is the best training ground for the simple everyday rules of health, and for the discouragement of excesses which cause the body to go "on strike" and so result in a fall from fitness.

RECIPES

WHY WE NEED VITAMIN A

A GREAT doctor has said: "Vitamin A is known to be essential for growth and the maintenance of normal conditions of the body in all periods of life. A deficient supply of vitamin A leads to a weakening of the tissues in the skin and in the linings of the body cavities, such as the mouth, the nose, the respiratory, digestive and genito-urinary tracts, resulting in susceptibility to infections." If an ample supply of vitamin A helps to keep these organs healthy we ought to eat some food containing this vitamin at each meal.

Which foods contain vitamin A in abundance? The best sources are milk, cream, butterfat or ghee, egg yolk and fish oils. This vitamin is also found in all yellow and green vegetables and fruit. Carrots, sweet potatoes, pumpkins, and also yellow maize (corn) contain a great deal of this vitamin as do all green leaves, bananas, peaches, apricots, mangoes and the papaya.

Long cooking may destroy the vitamin partly, but ordinary cooking does not destroy it. Even fruits and vegetables preserved in tins have a high vitamin content. The following recipes are rich in vitamin A.

SHEPHERD'S VEGETABLE SOUP

Half a cup cubed carrots; $\frac{1}{2}$ cup fresh spoonfuls minced onion; $\frac{1}{2}$ teatablespoonfuls minced parsley; 2 table-spoonfuls minced onion; $\frac{1}{2}$ teatablespoonful sugar; 2 cups boiling water; $\frac{1}{2}$ cup cream or rich milk; salt to taste.

Put the carrots and peas in the boiling water and let boil five minutes. Add the potatoes and onion and boil until all are tender. Season with salt. Add the parsley and let boil. Add the cream and allow to heat. Serve at once with cream crackers. This serves two or three.

HOME-MADE CREAM CRACKERS

Mix into $\frac{1}{4}$ cup slightly salted cream, as much flour as it will take to make a fairly stiff dough; roll out thin. Prick with a fork; then cut out into rounds or squares. Bake in hot oven taking care they do not burn.

SPINACH TOAST WITH EGG

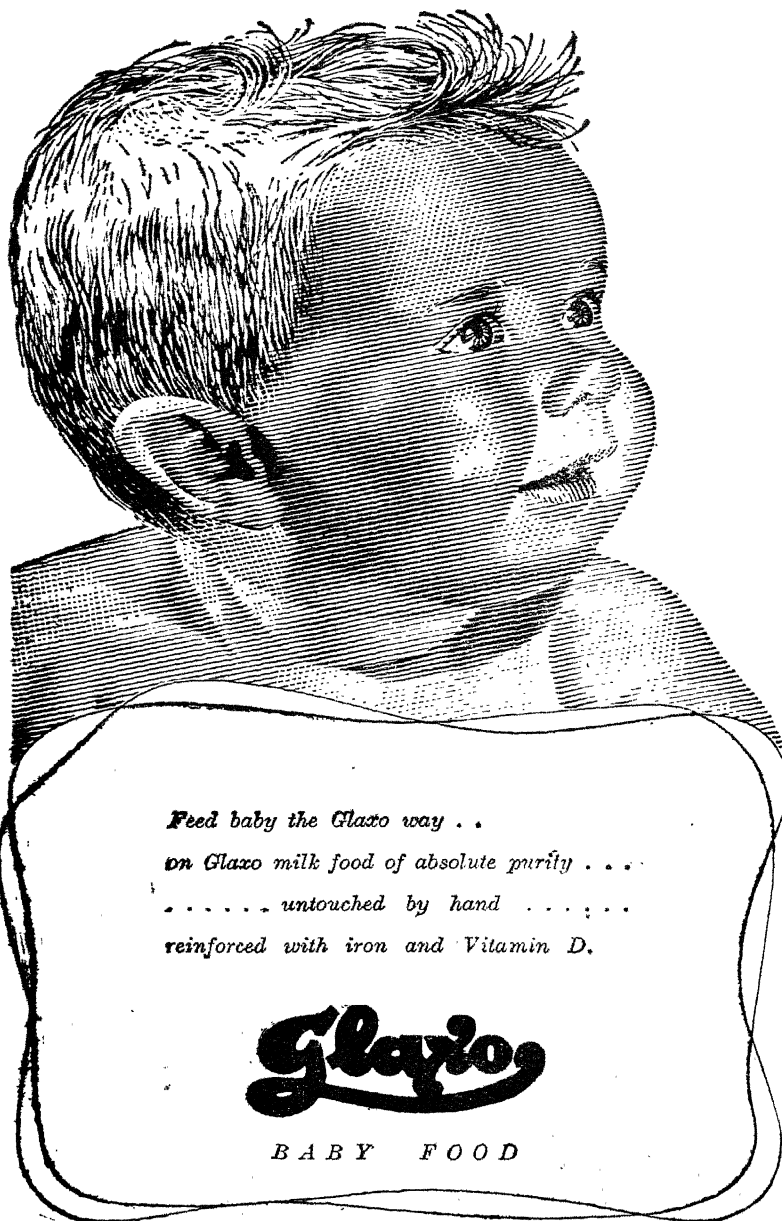
Two slices golden brown toast; $\frac{1}{2}$ cup cooked, sieved spinach or beet greens; two eggs hard-cooked or poached; 1 tablespoonful butter; salt to taste.

Cut toast in halves and butter it. Spread generously with spinach and dot with butter. Place halves of hard-cooked eggs cut length-wise, yolk side up on the toast or place poached eggs on it. Pour over all a little melted butter. Serves two.

TO POACH EGGS

Have boiling, salted water in a saucepan. Break fresh eggs and drop one

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by one into the boiling water. Let boil one and a half or two minutes. Remove with a perforated ladle or spoon.

CAPSICUM SURPRISE

Four large, sweet capsicums; 2 tablespoonfuls chopped parsley; $\frac{1}{2}$ cup cooked rice; $\frac{1}{2}$ cup breadcrumbs; 1 onion minced fine; 2 tablespoonfuls butter or ghee; $\frac{1}{2}$ cup tomato juice; $\frac{1}{2}$ dozen walnuts chopped fine.

Wash and cut tops from capsicums. Remove all seeds. Place capsicums in boiling, salted water and let boil a few minutes until half done. Remove from water at once. Cool and fill with the other ingredients prepared as follows: Saute the onion in a little butter until soft but not brown. Add all the other ingredients and mix well. Fill the capsicum cups with the mixture. Put a small piece of butter on top of each one. Place in an oiled baking dish and bake fifteen or twenty minutes in moderate oven. Serve at once. Serves four.

CREAMED CARROTS WITH PEAS

Four carrots scraped and diced; 1 cup shelled fresh peas; $\frac{1}{2}$ cup rich milk or cream; $\frac{1}{2}$ teaspoonful sugar; salt to taste.

Cook peas and carrots in two cups of boiling water until done. The water should be nearly all boiled away even though the saucepan is covered. Add the sugar, cream, a small piece of butter and a little salt. Serve at once. White sauce may be used in place of cream. This serves four.

FRESH APRICOT SALAD

Cut apricots in halves. Sprinkle each half with a little sugar and place in refrigerator to cool. Prepare green leaves of lettuce and sprinkle these also with very little sugar and lime juice. Place in refrigerator. Place a few lettuce leaves on each individual salad plate. Top each plate with whipped cream to which a very little thick curd has been added. Serve at once with cheese straws.

CHEESE STRAWS

Take dough as made for cream crackers and mix into it two tablespoonfuls of grated cheese. Roll out thin and cut into finger lengths. Bake and serve with salad.

ICE-CREAM SERVED IN MELONS

Two sweet cantaloups or melons; 4 scoops of refrigerator ice-cream.

Cut cantaloups in halves. Remove seeds and place in refrigerator. Prepare ice-cream as follows:

ICE-CREAM

Half a tin evaporated milk, chilled; $\frac{1}{2}$ cup chilled, sweetened orange juice; $\frac{1}{2}$ cup sugar or less.

Be sure all ingredients have been chilled in the refrigerator at least three hours before making. Beat the milk with a rotary egg beater until it is like whipped cream. Add sugar a little at a time

and beat. Add the orange juice and beat until all is like whipped cream. Place in refrigerator tray and freeze at high freezing point. Place a large spoonful of this ice-cream in the melons and serve.

HAWAII COCKTAIL

Place diced pineapple, grapefruit and orange segments, and melon cubes in

cocktail glasses and serve with honey dressing. This is a good vitamin dish

HONEY DRESSING

Quarter cup honey; $\frac{1}{4}$ cup lime juice; $\frac{1}{4}$ cup orange or pineapple juice.

Mix these well and pour over fruit. Chill thoroughly before serving.



Gulab Jamuns
made with DALDA

Prepare thin syrup from 1 lb. of sugar, add few drops of rose-water and keep aside warm. Into 1 tablespoon of maida (or arrowroot) rub in 1 teaspoon of Dalda. Grind $\frac{1}{2}$ lb. of khoa to fine powder, sift and mix well with maida by rubbing. Thoroughly knead mixture to a stiff dough, using very little water. Shape dough into small elongated balls. Heat Dalda and fry on very low fire. When gulab jamuns are light brown all over, drain, and soak in warm syrup.

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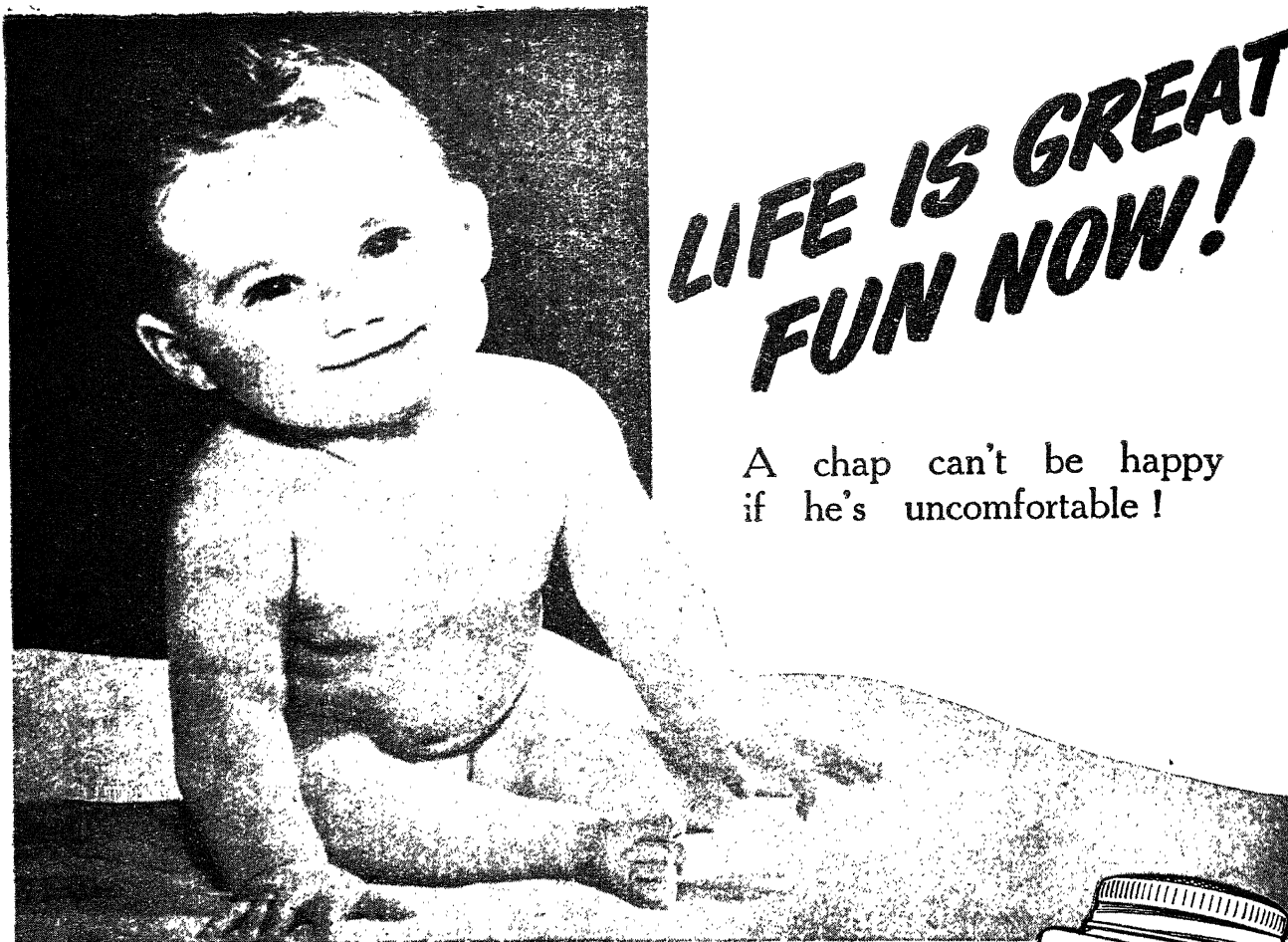


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COPIOUS TEARING OF THE EYES:
Ques.—"In the early hours of the morning my eyes water copiously. This gives me a lot of trouble and I am not able to devote attention to my studies. Please advise me on this matter."

Ans.—Copious tearing of the eyes may be due to obstruction of the lacrimal duct which normally drains off the tear fluid from the eye into the nose. You should try one of the commonly used nasal drops. If this does not relieve you, consult a physician who treats the

eye, ear, nose and throat, as to the proper procedure in your particular case.

STERILITY: Ques.—"Kindly tell me the causes of childlessness and how it can be remedied."

Ans.—The causes of childlessness in an apparently healthy couple are numerous. They range all the way from glandular disfunction through unsuspected major and minor diseases to simply not having intercourse at the proper time of the month. Sometimes following the biblical instruction of refraining from sexual intercourse during menstruation and for one week thereafter is sufficient to bring about pregnancy. Sometimes careful examination and skilled medical or surgical treatment is required. I should advise consultation with a competent physician.

CONSTIPATION: Ques.—"Every day I suffer from constipation and although I have taken many medicines for it they give only temporary relief. Kindly tell me of a cure."

Ans.—Constipation is a disease peculiar to man. No other animal seems to be troubled thereby. If one's bowel habits change suddenly it is usually a danger signal that should warn one that he needs a careful physical examination. If there is no infection of the lower bowel nor any intestinal parasites, tumour growth, or other abnormality, one can usually relieve the constipation by the following programme:

1. Drink two glasses or more of water than usual—one glass on rising in the morning and one on retiring at night are good times.
2. Increase the amount of leaves and vegetables and particularly fruit in one's diet by about 100 per cent.
3. Take some exercise every day—walking, cycling or swimming.
4. Go to stool at a regular time—within fifteen minutes after rising in the morning is a good time. One should assume the appropriate attitude even though one

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does not anticipate success. 5. Do not put off or delay responding to the urge to defecate at any other time. These measures, if persisted in for a month, will usually succeed in establishing a regular bowel habit whenever there is no actual disease of the bowel. If, after following these helps for a month, no improvement is noted, you should consult a competent physician.

BLACKHEADS AND PIMPLES: Ques.—"My son is suffering from blackheads and pimples on his face. What is the best and sure method of removing them? He also has scars and marks created by the pimples. What is the best method to remove these marks?"

Ans.—The treatment of blackheads (comedoes) and pimples is as follows:

1. Wash the face thoroughly twice a day with warm water and some good mild toilet soap.
2. Take a sun bath on the face for about twenty minutes daily.
3. Remove the blackheads once or twice a week by the following method: Steam the face for fifteen minutes with a towel wrung out of hot water. Then rub in some good grade of cold cream or olive oil over the areas bearing the blackheads. Steam the face again for five minutes. Then remove the blackheads by using a comedo remover obtainable for a few annas at any chemist's shop. Finally wash the face with water and then dry it. After daily face washing and after removing comedoes, apply some alcoholic face lotion such as Menmen's Skin Bracer or some other after-shaving lotion. Thiazamide ointment is beneficial if the blackheads are infected. Scars, if small and not numerous can be removed by a plastic surgeon but if there are more than half a dozen or so it would be better to leave them alone.

HYDROCELE; INTESTINAL GAS; WRITER'S CRAMP; USES OF ALCOHOL: Ques.—" (1) What are the causes, prevention and cure for hydrocele? (2) Please give a remedy which will remove flatulence. (3) What are the causes and cure for writer's cramp? (4) I find that a little alcoholic liquor has most beneficial effects and is efficacious in the treatment of such diseases as the common cold, rheumatic tendencies, nervous exhaustion etc. Please let me know your views."

Ans.—(1) Hydrocele is an accumulation of fluid in the serous sac that surrounds the testicle. Often it follows some trauma to the testicle but just as often it arises without discernable cause. Small hydroceles need no treatment, but when large enough to cause inconvenience the most satisfactory treatment is surgical. (2) Gas in the stomach or intestines is perhaps the commonest of abdominal complaints and its causes are numerous. The eating of certain foods notoriously produces gas—beans, especially if not thoroughly cooked, chestnuts, and cabbage. In some individuals other foods are responsible. If only one or two foods cause this one can avoid those foods, but if nearly everything seems to produce gas one cannot eli-

minate all the gas producers. Another source of gas is the unconscious swallowing of air with one's food. Some people find that this is more apt to occur at times when they are nervous or excited. Still another possible cause for gas is any of the intestinal infections or parasitic diseases. If one's gas persists in spite of care to avoid the gas producing foods and avoidance of swallowing air, one should consult a competent physician for a complete examination and treatment. (3) Writer's cramp is simply muscular cramps brought on by over-activity or unskilful activity of those muscles concerned with writing. It can be relieved by rest, massage, and by taking half a teaspoonful of common table salt with a glass of water after meals once a day, or if necessary during hot weather, twice or three times a day. (4) Ethyl alcohol, whether wine, whiskey, or what you have, is neither a food nor a medicine. It is useful for sterilizing instruments, preserving laboratory specimens and for burning in alcohol lamps. Man is better off the more he leaves it alone.

PERMANENT HAIR REMOVER:

Ques.—"My younger sister has an abundant growth of hair on her arms, legs and neck. This hair looks very ugly and we are all worried about it and want to remove it permanently at any cost. Please tell me the name of any chemical which removes hair permanently and also give me the name of the chemist where it may be obtained."

Ans.—Our writings in the "Doctor Says" column have been to warn the public against the use of patent hair removers as they are usually very irritating to the skin. A young girl who has a heavy growth of hair on her face should be taken to a competent physician for proper examination and treatment, but a girl who simply has much hair on the arms and legs and none on the face is not abnormal and need not worry about it. She should realize that God made her thus and should arrange her clothing and her actions to emphasize her other points of beauty.

SORE MOUTH: Ques.—"For the past two years I have been suffering from a sore mouth, throat and tongue. I have consulted many physicians and surgeons but they have only been able to give me temporary relief, and this has been achieved by the use of vitamin preparations. Being a sanitary inspector I am careful how I live and I watch my diet. I do not smoke or eat chillies. You are kindly requested to help me to cure this trouble permanently."

Ans.—The most common cause of sore mouth in this country is lack of proper vitamins in the diet. Since you have received some benefit from vitamin preparations it is probable that your difficulty is also on that basis. Usually it takes about two months of careful treatment to relieve the sore mouth and then one must follow a diet carefully for the rest of one's days to

prevent recurrence. Of all vitamin preparations, vitamin B complex tablets are particularly beneficial. You should also follow this diet: 1. Three servings of unpolished and unground rice (red rice) or whole grain cereals of some other type. Polished rice and refined wheat flour are lacking in vitamin B. If you are unable to get unpolished rice you should obtain some rice bran or polishings from the mill and either make a soup of the polishings or eat them as a cake or chappatie each day. 2. Fifty ground nuts with the bran on them—they should be roasted. 3. Half a seer of milk in any form daily. This milk should have been boiled for ten minutes and allowed to cool before use. 4. Use one egg daily. 5. Two servings of green or yellow vegetables and one serving of some other vegetable. 6. One serving of dal, dried beans, peas or other legume. 7. One citrus fruit daily or a tomato or raw cabbage salad. 8. One other fruit. You should supplement this diet by taking some vitamin preparation three times a day. We usually recommend one teaspoonful of Marmite with each meal. If you faithfully follow this plan for at least two months you will then begin to notice some improvement. If your gums are particularly sore you should consult your dentist. Leave off all medicines (such as calomel) which contain mercury or mercury compounds.

GIDDINESS; LOSS OF WEIGHT:

Ques.—" (1) Every two or three months I experience momentary giddiness, and while out horseback-riding last October, upon turning my head I was overcome by giddiness to such an extent that I fell from my horse. What does this indicate and what treatment do you recommend? (2) Is loss of weight at my age a serious matter? I am fifty-three years old, weigh 144 lbs and am 5' 5" tall."

Ans.—(1) Momentary giddiness may be due to any one of a number of major or minor ailments. I notice that you mention the last attack of giddiness came on as you "turned your head." This sounds very much as if you have an extremely active carotid sinus reflex. The carotid sinus is a small regulator of blood pressure situated in the side of the neck in the carotid artery. Its function is to lower the blood pressure if the pressure becomes too high. Sometimes this mechanism becomes excessively sensitive and responds to pressure caused by a tight collar or sudden turning of the head. You can test it for yourself by pressing with your finger for a few moments over the pulsating artery in the neck. This condition is never fatal in itself and can be avoided by wearing open collars and refraining from sudden movements of the head. If this does not seem to be the explanation of your difficulty you should consult a competent physician. (2) Normal weight for a height of 5' 5" should be between 124 and 139 lbs. It is not harmful to lose weight by proper dieting but spontaneous loss of weight should be viewed with suspicion and a physician should be consulted.

monsters whose bones now compose sacks of commercial fertilizer or adorn the niches of our museums.

More interesting still, scientists are becoming convinced that "there were giants in the earth in those days." Genesis 6:4. A few years ago several fossilized skeletons were found in the strata and caves of northern Palestine, and the press reported that "the men were of a race of giants." In the same area were found fossil remains of giant elephants, hippopotami, rhinoceroses and other beasts.

On July 3, 1914, *Time* carried in its "Science" section an article entitled "Giants in Those Days." The report began by quoting Genesis 6:4, and added that "last week evidence was offered to prove Genesis correct. A Java geologist had dug up bones of prehistoric men bigger than the largest known apes. The discoverer was Dr. R. von Koenigswald of the "Netherlands Indies Geological Survey."

Dr. Franz Weidenreich, of Manhattan's American Museum of Natural History, after examining the fossils, was reported in the same article as having named "this man monster, who was certainly much larger than a gorilla, *Gigantanthropus*," which name means "Giant Man."

Also: "Taking a fresh look at the thick-boned fossils of such other primitive human beings as the

Heidelberg Man. Weidenreich now believes that 'gigantism and massive-ness may have been a general or at least a widespread character of early mankind.'"

On February 10, 1946, the *New York Times* said that Doctor Weidenreich had stated "that Pithecanthropus (a previously found fossil man) had a more primitive manlike predecessor in what he calls 'Meganthropus' or 'Giant Man.'"

Later the same newspaper, on October 13, 1946, reported that Doctor Koenigswald had delivered a speech before the Southeast Asia Institute, in which he declared that "the most recently discovered fragments in Java and China indicate that through successive stages of development man had shrunk to his present size from a race of giants twice the size of the modern gorilla—men so big that they would have to crawl into a modern house on hands and knees."

The report added: "The fragments of skulls found by Doctor Koenigswald in Java and China increase in size directly in proportion to their antiquity."

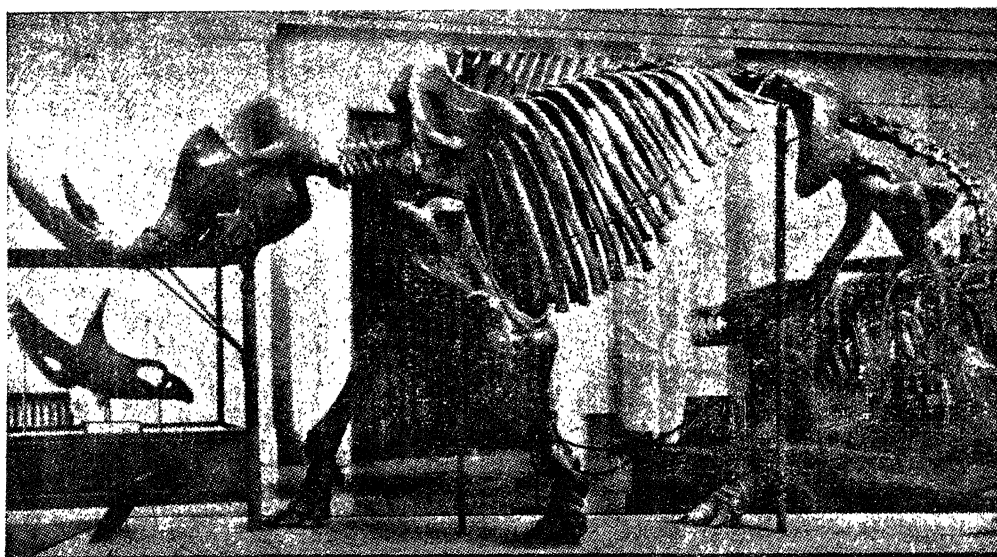
On October 28, 1946, *Time* said that the human remains discovered by Doctor Koenigswald "must have belonged to monstrous manlike creatures eight to nine feet tall and weighing 600 to 700 pounds. They were four times as big as modern man."

In Ohio, the *Cleveland Plain Dealer*, of August 5, 1947, carried a news item saying that there had recently been discovered in the Colorado desert, near the Arizona-Nevada-California line, "relics of ancient civilization, whose men were eight or nine feet tall."

Still later, on January 2, 1948, the *New York Times* reported that near Taungs, in Cape Province, South Africa, fossil remains of human beings had been found in a very remarkable bed of bones discovered there. Besides man-made implements, "fossil jaws and teeth of extinct baboons, antelopes and lizards larger than any living types" were found. One of the fossil men is described as "a near giant."

According to the *New York Times* of January 22, 1948, the American Museum of Natural History was exhibiting to the public "one of the world's most valuable collections of the original specimens of prehistoric man, including the jawbone of the Java Giant Man." In the collection were "the teeth of *Gigantopithecus*," which "consist of four huge molars with a typical human pattern, but larger than any other known teeth of anthropoids or man."

These and many other reports reveal that the search for greater light on ancient man by the study of human fossil remains is being continued with new zeal. Having discarded certain preconceived notions



Fossil deposits show that the time was when the earth was inhabited by the gigantic mastodon as pictured above. As animals were mammoth in size in those pre-flood days, so was man much larger than his present stature.

about the origin and history of mankind, many scientists are now approaching the subject with more open minds than did the immediate disciples of Darwin.

It is still too early to evaluate these reports on the finding of giant human fossils. We must await more complete data and carefully prepared studies based on them. However, the reports do indicate that some scientific minds are making a new approach to the subject of human antiquity, which is both refreshing and interesting.

When we turn to the Holy Scriptures, we find that Adam is said to have died when he was 930 years old. (Genesis 5:5.) Methuselah came to his end at the ripe old age of 969. (Verse 27.) The latter died in the year 1656 after creation, that is, the year in which the flood came. He had enjoyed almost 250 years of life as a contemporary of Adam. Indeed, the average life-span of the patriarchs from Adam to Noah, who lived to be 950 years old (Genesis 9:29), was 912 years. This does not include Enoch, who is still living. (Genesis 5:21-24; Hebrews 11:5.)

The Sacred Word, in describing conditions on earth during antediluvian times, not only states that "there were giants in the earth in those days," but adds that even after polygamy was introduced among men, the children born to them were of very large proportions. (Genesis 6:4.)

The degeneracy of the human race in so far as the physical size of human beings is concerned, appears to have been somewhat gradual and by successive stages. The ages of the descendants of Shem, who lived to the age of 602, gradually shortened until that of Abraham was 175, and that of Isaac was 180. (Genesis 11:10-26; 25:7; 35:28.) Jacob commented on the fact that his life-span, which totalled 147 years, was less than that of his father and his grandfather. (Genesis 47:9, 28.) Joseph, his son, died at the age of 110. (Genesis 50:22.) Moses died at 120, and Aaron, his brother, at 123. (Deuteronomy 34:7; Exodus 7:7.) About five hundred years later David wrote: "The days of our years are threescore years and ten; and if by reason of strength they be fourscore years, yet is their strength labour and sorrow; for it is soon cut off, and we fly away." Psalm 90:10.

A few tribes of giants inhabited areas in and about Palestine in the

days of Abraham. (Genesis 14:5.) Remnants of them existed there as late as the time of Moses. (Deuteronomy 2:10, 11, 20, 21.)

The iron bedstead of Og, Amorite king of Bashan, was nine cubits long and four wide. The ordinary cubit, called "the cubit of a man," was about eighteen inches long. Thus Og's bed was about thirteen and one-half feet long and six feet wide. It was kept as a relic for display in Rabbath, capital city of the Ammonites. Furthermore, Og was the ruler of a nation of giants. (Deuteronomy 3:11, 13; Numbers 13:33; Joshua 12:4; 15:8; 17:15; 18:16.)

Goliath, the Philistine giant whom David slew with a sling and stone in the eleventh century before Christ, towered six cubits and a span.

(1 Samuel 17:4.) He was a member of a family of giants. (2 Samuel 21:16-22; 1 Chronicles 20:4-8.) Benaiah, a hero of David's army, slew an Egyptian giant who was five cubits high. (1 Chronicles 11:23.)

Indeed, it is reasonable to believe the Scripture testimony that when Adam was created, God made "him a little lower than the angels." Psalm 8:5. Untainted by sin and the degenerating effects of sin, he was a beautiful creature to behold, and was of large and perfect proportions as compared to men now living. Indulgence in sin during the passing millenniums since creation has resulted in physical degeneracy, and it is not surprising that a scientist should declare that "man has shrunk to his present size."

'THOU ART THE MAN'

F. A. SPEARING

DO YOU remember the story in which this indictment appears? It is the story of David's sin of causing the death of another in order that he might take his wife to himself and of David's subsequent indictment by the prophet Nathan. "And Nathan said to David, Thou art the man!" 2 Samuel 12:7. "Thou shalt not covet!" "Thou shalt not steal!" "Thou shalt not commit adultery!" "Thou shalt not kill!" David had broken all four commands, directly, and others indirectly, in the gratification of his unholy desires.

FEARFUL MORAL COLLAPSE

"Thou art the man!" This solemn charge could justly be laid at the door of scores of thousands of men and women in the world at this present time. That number at least have been guilty of breaking the seventh commandment; guilty of breaking up homes and breaking hearts; guilty of bringing tragedy, and pain, and sorrow to their fellows, and to themselves. From the *Bournemouth Daily Echo* we select the following, which may be taken as representative of many such press statements:

"Marriage as a life-long partnership is rapidly passing out of fashion. That, at least, is the inference which can be drawn from divorce statistics.

"In 1900 there were 500 divorces and separations. This year there will be approximately 50,000. Clergy,

magistrates, doctors, and psychologists join in deploring this disastrous trend. But with no great effect.

"Let us face it. In Britain one marriage in every five ends in the divorce courts; and there is a steady decline in the number of children who, on leaving school, can repeat the Ten Commandments and the Lord's Prayer."

TEN COMMANDMENTS STILL NEEDED

Do we observe in this statement a case of cause and effect? This journal has been criticized from time to time for insisting that the commandments of God are still binding on all men; that they should be taught to children and adults alike. Perhaps if there had been more teaching and preaching along these lines, the machinery of the divorce courts could have been slowed down materially. Even now, if children and young people were taught by earnest Christians the sacredness of every one of God's commandments, instead of being permitted to find their religion in the cinema, much could be done to stem the tide of evil.

NOT PSYCHOLOGY BUT THE GOSPEL

Meetings of the International Congress of Psychology were held in Edinburgh recently. One of the speakers, Miss M. L. Phares, of Iowa, U. S. A., told members about the questions Young America is asking. Here is one of the questions:

"My parents are divorced and so are many of my chums' parents. We kids often talk about this. Can psychology help us to get married to the right ones so that we won't have to get divorced as our parents have done?"

This is surely a cry from the heart! One marriage in three we are told goes wrong in the United States, so that the situation there is worse than in Great Britain. Can psychology help these young people? Not a great deal. What is needed is the religion of our Lord Jesus Christ. He Himself said: "If ye love Me, keep My commandments," and added: "If ye keep My commandments, ye shall abide in My love; even as I have kept My Father's commandments, and abide in His love." John 14:15; 15:10.

Surely it would not be possible to obtain better counsel than this? Could we go wrong if we observed the commandments of God, as Jesus did? Could we go wrong if we followed His steps?

The seventh of these holy precepts reads: "Thou shalt not commit adultery!" "Thou shalt not commit adultery!" In these days the emphasis needs to be placed on the personal pronoun. To David, the prophet of the Lord said: "Thou art the man!" To how many do these words apply today? Our hearts are touched as we think of the appeal of that young man from America: "My parents are divorced. . . Can psychology help?" God can help, if only men will let Him! Said His only Son to a great concourse of men and women: "Blessed are the pure in heart: for they shall see God!" Matthew 5:8. In that audience were adulterers, fornicators, people of low mind who did not hesitate to trample on God's holy command. How they must have trembled as the shaft of truth pierced their sinful hearts!

BLESSED ARE THE PURE

Have these words of our Saviour lost their meaning today? "Blessed are the pure in heart!" In this text, the word "blessed" means "happy." What do the wilful transgressors of God's law know about happiness? We often hear the phrase: "They are very much in love with each other!" These are beautiful words when they are truly spoken. But are they ever true in the case of a couple who have forsaken their former partners because of their attraction for each other? Such peo-

ple know little of happiness and a great deal about misery. The Master tells us that the pure in heart shall see God. No such promise is held out to those who deliberately turn from the holy commandment.

In the days of Moses, adulterers and adulteresses, on conviction, were put to death. (Leviticus 20:10.) We know of no country where such a law could be enforced today. Yet adultery is a transgression of God's law; and transgression is sin; and the wages of sin is death. There is no hope in the hereafter for those who continue to live in sin. Eternal life, eternal bliss, is not for the disobedient, but for the obedient.

In these days, all sorts of reasons are given why a man should obtain a divorce from his wife, or why a woman should obtain a divorce from her husband, but Jesus Christ has laid down an inflexible rule regarding the matter.

Matthew 19:9 reads, "And I say unto you, Whosoever shall put away his wife, except it be for fornication, and shall marry another, committeth adultery: and whoso marrieth her which is put away doth commit adultery."

So if inspired guidance is needed in these intimate matters here it is. Woe unto the man who attempts to belittle, or to "water down" the commands of God!

Thank God, the case of a man or woman who has broken the seventh commandment is not hopeless. The plan of salvation covers such cases, as we see from our Lord's words to the woman taken in sin. (John 8:1-11.) The tragic consequences of sin may remain, for a time, but forgiveness comes to the truly repentant heart. This is clearly shown in the case of David, His prayer is the prayer of a contrite spirit: "Have mercy upon me, O God, according to Thy lovingkindness: according unto the multitude of Thy tender mercies blot out my transgressions. Wash me thoroughly from mine iniquity, and cleanse me from my sin. For I acknowledge my transgression: and my sin is ever before me."

He had broken the seventh commandment, as we have seen; but his repentance was genuine. He prayed for forgiveness, for cleansing, but he did not forget to acknowledge his transgression. "Purge me with hyssop," he continues, "and I shall be clean: wash me, and I shall be whiter than snow." Psalm 51:7.

What could the Lord do with a man like David? What did the Lord do for this man? He made a new man of him! And that is the very thing He proposes to do with the sinner in these days. Many a man, and many a woman has borrowed the language of the sinful but sorrowing king of Israel. They have acknowledged their sin; they have forsaken the unclean thing; they have sought and found pardon. And what God did for David, and what He has done for countless thousands of men and women of every age, of every clime, He is ready and waiting to do for you, and for your neighbour, whosoever he, or she, may be. It is well to remember that the sinful thought is as the act of transgression (Matthew 5:27, 28.) That, too, must be confessed and forsaken.

Perhaps someone is asking, even now: "Can God do anything for a moral leper like me. Can He? Will He?" Here is your answer:

"Come now, and let us reason together, saith the Lord: though your sins be as scarlet, they shall be as white as snow; though they be red like crimson, they shall be as wool." Isaiah 1:18.

Did you notice, as you read those wonderful words, that God is speaking of your sins? We are rather apt to think of the needs of the other man, but this text is for you; a loving and compassionate Father speaks of your sins! If you wish, you can substitute the word "my" for "your"; then you would read: "Though my sins be as scarlet, they shall be as white as snow!"

Here is a companion scripture taken from the New Testament: "If we say we have fellowship with Him and walk in darkness, we lie, and do not the truth: but if we walk in the light, as He is in the light, we have fellowship one with another, and the blood of Jesus Christ His Son cleanseth us from all sin. If we say that we have no sin, we deceive ourselves, and the truth is not in us. If we confess our sins, He is faithful and just to forgive us our sins, and to cleanse us from all unrighteousness." 1 John 1:6-9.

Remember that God's commandment springs from a heart of love. He spake the word for your good. Will you not heed and obey His sacred law? Will you not confess and forsake *all* your sins, and joyfully walk in the light of His commandments? Will you not say, now: "By God's grace, I will!"